TRENDS IN NATURAL RESOURCE COMMODITIES

Statistics of Prices, Output, Consumption, Foreign Trade, and Employment in the United States, 1870-1957

Neal Potter and Francis T. Christy, Jr.

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TRENDS IN NATURAL RESOURCE COMMODITIES

Preface

ECONOMIC GROWTH dictates the nature of the demand for natural resources, and the availability of natural resources, in turn, influences a nation's economy. Have limitations of resources retarded economic growth in the United States? How have natural resources influenced the composition of economic growth? What are some of the processes involved? What can be learned about prospects for the future? These and similar questions are of concern not only to economists and other social scientists but also to a growing segment of a broader public. Yet analysis of such questions has in the past been handicapped by lack of consistent, readily available data. There was a great mass of statistical information, but much of it was scattered and contradictory.

In this volume Neal Potter and Francis T. Christy, Jr., present comprehensive consistent long-term series for the principal economic aspects of major natural resource commodities, from which they have derived aggregate measures for all resources and for major groups of resources throughout a significant period of the nation's growth. Even a brief examination of their tables will indicate the problems faced in drawing together, from hundreds of sources, the materials necessary for a satisfactory representation of each measure for each commodity.

The Potter-Christy study, which has been several years in the making, was begun under the direction of Harold J. Barnett when he was a member of the Resources for the Future staff in charge of studies in the field of resources and economic growth. In fact, it supplies the statistical underpinning for and is otherwise closely related to a theoretical analysis by Mr. Barnett, now professor of economics at Wayne State University, and Chandler Morse, professor of economics at Cornell University. This book, "Economics of Natural Resource Scarcity," will also be published for Resources for the Future by The Johns Hopkins Press.

The present volume, while in the manuscript stage, has been drawn upon for other RFF studies, including a forthcoming comprehensive appraisal of natural resources problems and prospects in the United States between now and the year 2000. In its published form we hope that Mr. Potter's and Mr. Christy's study will be a useful reference book for resources students in many fields.

Joseph L. Fisher, President
Resources for the Future, Inc.

March 15, 1962

Acknowledgments

THE INITIATION OF this study was made under the thoughtful and stimulating guidance of Harold J. Barnett, who was formerly the director of studies in resources and national growth at Resources for the Future. Mr. Barnett's discerning advice and support then, as well as throughout the whole period, have been of immeasurable value to us, and our gratitude cannot be adequately expressed.

We are also indebted to many individuals who gave us help in locating and understanding statistical data. We cannot name them all, but we would like to give particular thanks to Vivian Eberle Spencer, Bureau of the Census; John W. Kendrick, George Washington University; James A. Crutchfield, University of Washington; John C. Machisak and Naomi W. Kearney, Bureau of Mines; and Reuben Hecht, Agricultural Research Service.

Our colleagues at Resources for the Future have given us considerable aid throughout the preparation of this volume and we are particularly grateful to Bruce C. Netschert, R. Burnell Held, Orris C. Herfindahl, Sam H. Schurr, Marion Clawson, Vera F. Eliasberg, Bernard Sobin, and Edward Boorstein.

We are greatly indebted to Harold Barger of Columbia University for his critical and constructive review of the manuscript and to Vivian Spencer for her valuable comments at an early stage of our work. In addition, we wish to thank the following for their careful and helpful review of the data: S. V. Wantrup, Christoph Beringer, Michael F. Brewer, Vernon W. Ruttan, and Stephen C. Smith at the University of California; Miss Spencer and Herman Miller at the Bureau of the Census; Paul McGann, Charles W. Merrill, Wallace Key, and many others at the Bureau of Mines; James C. Rettie and Dwight Hair, U.S. Forest Service; C. Kyle Randall and his colleagues at the U.S. Department of Agriculture; John A. Guthrie, State College of Washington; E. A. Power and William H. Dumont, U.S. Fish and Wildlife Service; Seymour L. Wolfbein and Jeanette G. Siegel, Bureau of Labor Statistics; Theodore W. Schultz and D. Gale Johnson, University of Chicago; Moses Abramovitz, Stanford University; Harlow W. Halvorson, University of Wisconsin; Dragoslav Avramovic and his associates at the International Bank for Reconstruction and Development; Aubrey J. Brown and Dana G. Card, University of Kentucky; and L. L. Boger, Michigan State University. We must note, however, that we have not been able to take full account of all these comments and that the final responsibility for the data and the calculations are entirely ours.

Many hands aided in the transcription and computation of the series, and for this we thank: Katherine Dolfis, Erna Peters, Sedley K. Pyne, William S. Schnell and Martha Ransopher Van Kirk. Our thanks also go to Jack Anglin and Russell Armentrout for their fine preparation of the many charts throughout the book.

Finally, during the last stages of the preparation, we are extremely grateful for the precise and persistent editing of Pauline Manning. Her task was very trying and difficult. Her accomplishments have been outstanding.

Neal Potter
Francis T. Christy, Jr.

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SUMMARY OF THE TRENDS

Introduction

THE YEARS SINCE 1870 have been a period during which the United States was transformed from an undeveloped to a highly industrialized community. This book presents a collection of economic time series dealing with natural resource materials produced or consumed in the nation during those years.

At the beginning of the period, the output of iron ore in the United States was no more than it is today in such underdeveloped countries as India and Brazil, though the output of coal was perhaps eight times as great. The railway mileage was about the same as it is today in India and Pakistan, or twice that in Brazil. The amounts consumed of most of the basic materials of the modern economy — oil, steel, electricity, cement, rubber, etc. — were of course considerably less than those consumed today in India, Brazil, China, the Philippines, or any of the other underdeveloped countries. The intensity of use of agricultural land in the United States in the 1870's was also much less than in those countries (except perhaps Brazil) today, though probably the American methods of cultivation were more advanced.

During the period covered by this study, the United States moved from the position of capital importer to that of capital exporter; from being a net exporter of unprocessed materials to being a net importer; from significant net imports of manufactured goods to important net exports. As can be seen from the accompanying table, exports of raw materials in 1870-74 were nearly twice as great as imports, while imports of manufactures were more than twice exports. In 1953-57, both situations were approximately reversed.

The period was also characterized by a rapidly increasing urbanization: in 1870, one quarter of the people lived in cities; by 1950, the proportion of city dwellers to the total population had risen to 60 percent. It was also a period in which:

Population increased four-fold.
Land appropriated for agricultural use almost tripled.
Timber output more than tripled.
Mining of bituminous coal increased 18-fold.
Extraction of iron ore increased 26-fold.

TABLE 1. U.S. Net Imports of Materials and Manufactures
(million dollars, current prices)

	Crude materials and crude foodstuffs	Manufactured foodstuffs	Semifinished and finished manufactures
1870-74:			
Imports	81	112	142
Exports	144	83	45
Net imports	−63	29	97
1953-57:			
Imports	2458	1158	2743
Exports	1635	1007	6424
Net imports	823	151	−3681

SOURCE: U.S. Department of Commerce, Bureau of the Census: *Statistical Abstract of the United States*, various years.

Extraction of copper ores increased 77-fold.
Output of crude petroleum increased 490-fold.

The significance of long-term data on natural resource materials is indicated by the oft-repeated statement that this nation's unequaled wealth is a result largely of its great endowment of natural resources; and by the widely accepted doctrine that increasingly intense use and depletion of natural resources have a tendency to impair the nation's strength and reduce the future standard of living of its people. There have been repeated warnings of impending catastrophe—warnings which began at least 60 years ago. On the other hand, there have been many arguments to prove that technology can overcome increasing shortages of natural resources ad infinitum.[1]

It is not possible to resolve such sweeping arguments with statistical data; but it is hoped that the data presented here, being relatively consistent, covering a long time period and one of great changes, and being convenient and uniform, will enable the reader to get a broader perspective than has been possible heretofore and will provide him

[1] See Harold J. Barnett and Chandler Morse, "Economics of Natural Resource Scarcity" (to be published by The Johns Hopkins Press, 1962).

with basic information needed for the consideration of a multitude of problems related to resources.[2]

The data presented cover price, output, foreign trade, consumption, employment, and the employment-to-output ratio for each of the major resource commodities and for a number of significant groupings thereof. The sources of the data and the manipulations we have applied to them are indicated. However, it is not possible to express in a few words our debts to the work of others, both on resources as a whole and on various groups of resources and individual commodities. The bibliographical references and the notes to the various tables give some indication of the extent of our indebtedness. The ratio columns in the commodity tables serve to compare some of our series with some of those published by others.

We estimate that our series cover nearly 90% by value of all material resource commodities used or produced in the United States. Some major commodities, such as water and wildlife, have not been included because of the absence of data. Several minor commodities (for example, cauliflower, uranium, mica) have been excluded because of limitation of data, time, and space. In many cases we cover only one or a few aspects of a material, because one aspect is important while another is not. For example, we cover the decline in labor employed in the care of horses and mules, but not their prices or output, since they were principally an "intermediate product" not sold but used to produce the "final product." We cover the imports of nickel and chromium but not their domestic production, because the latter is trivial in relation to the amounts imported and to the amount and value of other metals produced.

Our data do not measure natural resources—land, water, mineral reserves, etc.—directly, but measure their products. Natural resources are more "basic" than their products, but economic data on the products are more enlightening and more tractable than those on resources as such. A difficulty in dealing with resources as such is that, since resources are parts or aspects of the earth's crust which are regarded as of significance to man, particularly in an economic sense, and since the earth is relatively unchanging, the statistics of resources reflect only the changing human knowledge of the materials on it—their location, their usefulness, and the technology of extraction, cultivation, transportation, and processing. Data on the value of natural resources, or on their quantities, mean little apart from such cultural factors. For example, we cannot decide whether to include the crops and minerals in sea water until we know prices, costs, and locations.

Statistics on "reserves" of natural resources thus reflect the technology and knowledge of the day, just as much as data on outputs and prices of materials derived from them. But in addition, they present difficulties: there are fewer data published, there is much more room for error and opinion, there are few objective facts (such as quantities extracted or prices in open-market sales), and most reserves lie on or beyond the margin of economic significance or public knowledge. For these reasons we have not extended this study to include any such data.

Another direct measure of natural resources would record the value of the natural resource contribution to the value of products—that is, the "pure rent" of "land" in classic economic theory. This idea has considerable intellectual attraction, but it is only a theoretical construct, and statistical data are almost wholly lacking. Moreover, even in theory, the rent of land represents the excess of its productivity over that of "marginal" land, and this in turn depends on technology, transportation, location of population, etc. Aggregates of pure rents would represent nothing but chance concurrences of these factors and the chance sizes of differentials among different "kinds" of land.

Thus we have come to the conclusion that the most useful as well as the most available data on natural resources are those which are indirect, relating to the products of the resources and not to the resources themselves. Moreover, the best economic data are those which do not attempt to eliminate the factors of human knowledge and technology but reflect them in full. Measures of resources which attempted to exclude the effects of advancing technology could not reflect truly either the physical universe or man's relation to it.[3]

Because our statistics relate to materials which have been partially processed, the prices reflect heavily the values which labor and enterprise have added to the values contributed by nature. In the case of wheat, man has contributed values by discovering, clearing, and improving the land and by planting, protecting, and harvesting the crop (in addition to considerations we might add with respect to transportation). In the case of copper, man has added values through discovery, mining, concentrating, and refining before the material reaches a stage at which it can be meaningfully priced.

As a result, the prices of inputs such as labor, capital, fuels, etc., are important to the evaluation of our price data. So also are the degrees of monopoly and government regulation in the markets both for the inputs and for the outputs of our resource materials.

In a word, we offer statistics which have been ordered, simplified, and clarified. We do not offer conclusions, because these require still more facts, as well as a theoretical framework.

[2] It might also be noted that data on materials constitute the principal measures of economic goods which have consistent, meaningful measures over such a long period of time.

[3] If we look only at the physical, noncultural aspect of resources, it is clear that the scarcity of materials of nature is simply proportional to population. If the population doubles, scarcity doubles. If any ores are used, minerals are obviously (?) scarcer than before they were used. If we do not conjoin the factors of technology (including transportation) and discovery to those of expanding population and depletion, Malthusian conclusions are inevitable. The results of such an oversimplified view are obvious, and this seems to be the basis of many popular predictions of calamity in discussion of population and resources.

Highlights of the Data

WE PRESENT HERE some highlights of the data to be found in the 324 tables in the main body of the book. This chapter presents the results by sections, each of which summarizes results for one of the measures offered (price, output, etc.); the following chapter presents summaries for each of 32 major commodities. Most of the charts herein use a logarithmic scale. This scale gives equal value to equal percentage changes in each series and thus enables the eye to compare series of completely different magnitudes.

Price

Chart 1 shows the movement of the deflated price[1] of resource products over the period 1870-1957, in the aggregate and by major sectors. The only sector showing an important uptrend is forest products; the others were less than 20% above their 1870-74 level by 1953-57. These rises are smaller than many of the short-term fluctuations, as can be seen by examining the chart.

The principal sector affecting the movement of the all-resource price index is agriculture. Chart 2 shows the relative values of each sector in the all-resource price index in 1953-57, using 1954 outputs as weights. The relative values which each sector had in 1910-14 and in 1870-74 are shown for comparison.[2]

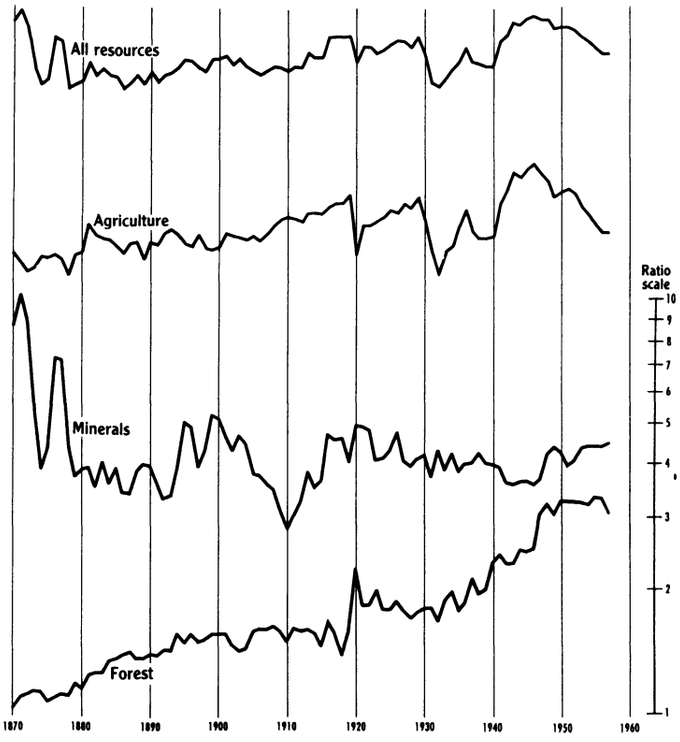

CHART 1. Resource sectors: deflated prices (sources: Tables EP-1, AP-1, MP-1, FP-1, N-1)

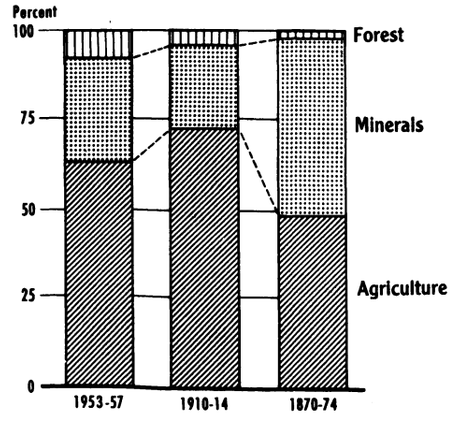

CHART 2. Percent of total weight in price index (1954 quantities) (source: Table EP-1)

[1] Prices deflated by (that is, divided by) the Bureau of Labor Statistics' general wholesale price index. These deflated prices are used as an attempt to remove the effects of changes in the value of money. When the general level of prices rises as much as the price in one of our series, the deflated price shows no change; when it rises more than the resource product price, the deflated price shows a fall. (See notes to Table N-1.)

[2] These are values, in each of these five-year periods, in the index which uses 1954 outputs as weights; indexes which use 1929 outputs and 1902 outputs as weights for all resources for the entire period are given in Table EP-1.

Chart 3 shows how two different trend lines may be used to summarize the movement of relative price of all agricultural commodities over 88 years. Prices might be regarded as rising at ½% per year, or as rising only in 1900-1920 but at the rate of 1¼% per year. These decades of rise came after the close of the frontier and before the release of land from raising feed for horses and mules.

We could also ask ourselves: Did a relative rise really occur? Despite government support programs for certain major crops, the 1953-57 average of all agricultural prices was only 20% above that of 1870-74; the 1957 price was only 8% above the 1870.

The movement of these price indexes reflects in a summary and inadequate way the movement of a large number of prices of individual commodities. These are given in detail in the tables in the main part of the book.

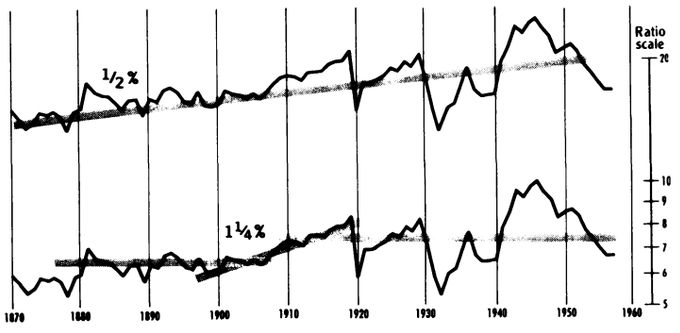

CHART 3. Agriculture: deflated price (sources: Tables AP-1, N-1)

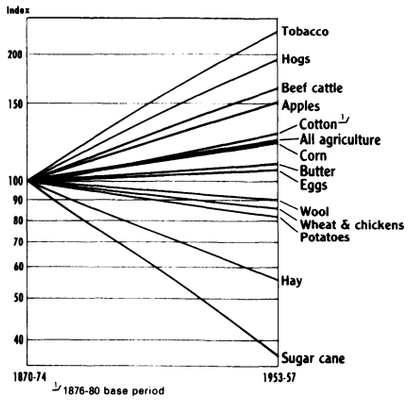

CHART 4. Agricultural commodities: deflated prices (1870-74 = 100) (sources: various AP tables; N-1)

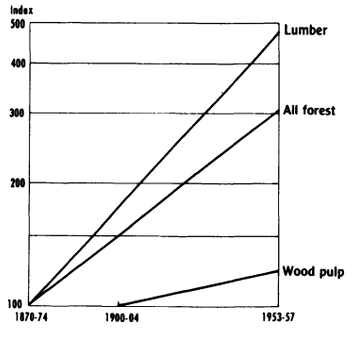

CHART 5. Forest products: deflated prices (1870-74 = 100) (sources: Tables FP-1, FP-2, FP-8, N-1)

A different sort of summary of the movement of the many individual prices is given in Chart 4, which shows the relative positions in 1870-74 and 1953-57 of the deflated prices of some of the more important agricultural commodities. The rise in the index of all agricultural prices would be eliminated if the rise in just three series were absent: tobacco, hogs, and beef cattle.

Chart 5 summarizes the movement of the important prices in the field of timber products.

Chart 6 shows the movement of mineral prices. The index for all minerals shows a 22% rise. Coal is the chief mineral showing a rise in deflated price. (See Tables MP-1 and MP-2.)

Occasionally different indexes of the same commodities give different results. Chart 7 compares different methods for measuring the movement of fuel prices (see Tables MP-2 and MP-3). These indexes, representing the movement of prices weighted by 1954 outputs, by 1902 outputs, and by the average cost per energy unit (Btu) of fuel produced, are shown graphically in this chart. It will be noted that the cost of mineral fuels per contained energy unit rose more than either of the other indexes. This is because energy has been produced to an increasing degree, in the form of fuels of higher quality, representing more convenience and economy to the consumer.[3] Thus in 1870 only 3% of the mineral energy output was in the form of oil; by 1957 38% was. Since the cost per Btu in 1957 of energy contained in oil was nearly three times

[3] For example, it has been estimated that Diesel engines require ⅐ as much energy per ton-mile of freight hauled as do coal-steam engines (and much less maintenance, labor, etc.); gas furnaces average 30% more efficiency than coal furnaces. (H. J. Barnett, *Energy Uses and Supplies, 1939, 1947, 1965.* U.S. Bureau of Mines, Information Circular 7582, pp. 38-39 and Table 28.) For the shift in the pattern of consumption, see below p. 10.

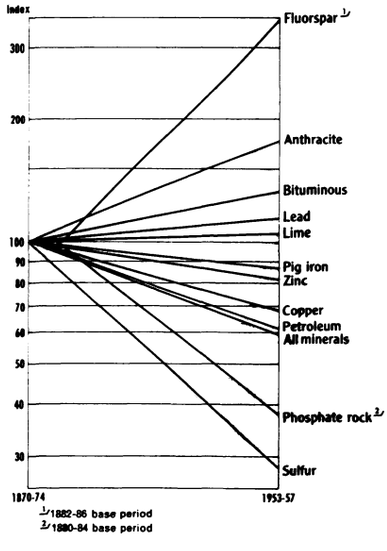

CHART 6. Minerals: deflated prices (1870-74 = 100) (sources: various MP tables; N-1)

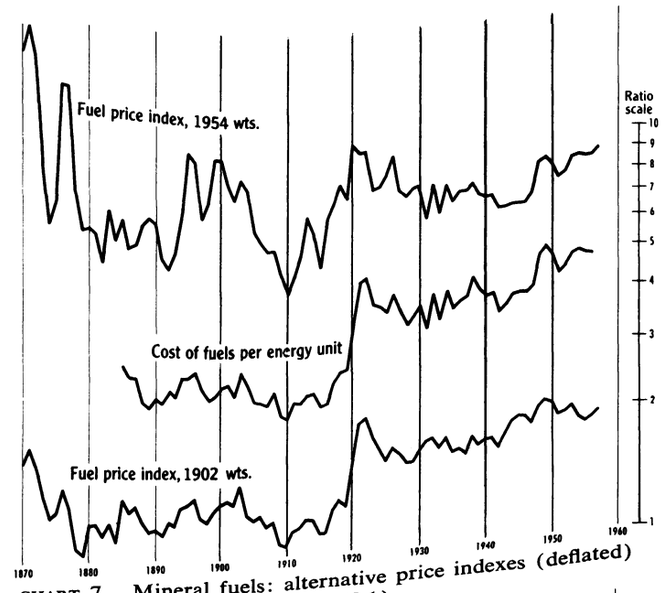

CHART 7. Mineral fuels: alternative price indexes (deflated) (sources: Tables MP-2, MP-3, N-1)

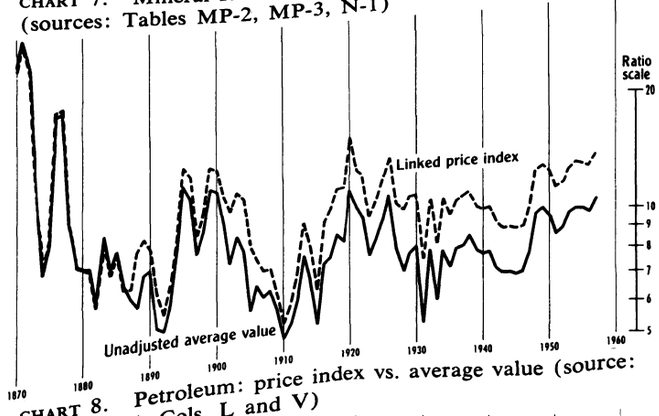

CHART 8. Petroleum: price index vs. average value (source: Table MP-4, Cols. L and V)

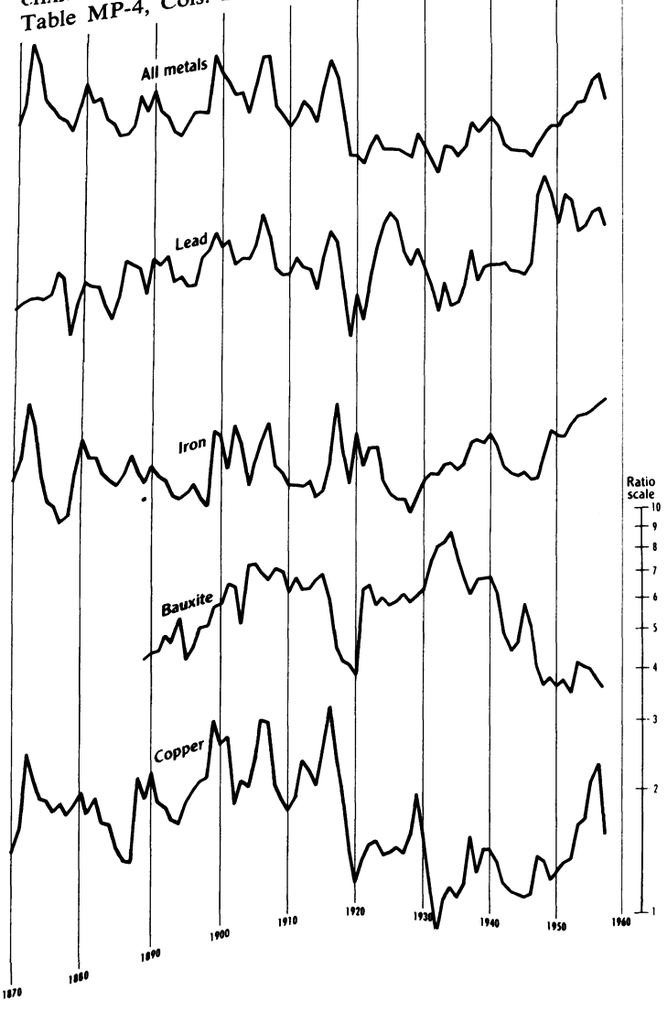

CHART 9. Metals: deflated prices (sources: Tables MP-10, MP-20, MP-12, MP-22, MP-19, N-1)

the cost of that contained in bituminous coal,[4] this shift in the proportions of output of the different fuels accounts for a major portion of the rise in the energy-cost index. The fixed-weight price indexes are better indicators of the changes in the cost of mineral fuels over the period. The 1954-weighted index is an indicator of the costs which would have been borne by an economy using the mineral fuels in 1954 proportions, with petroleum predominating; the 1902-weighted index shows the rising costs which would be borne by an economy using the mineral fuels in the proportions of 1902, with coal dominant. Both exclude the effect of the shift to more expensive fuel.

Another comparison worth noting is the difference between the price index which we offer for petroleum and the more usual series on the average value of all petroleum at the well. The two series are shown in Chart 8; our index rises more than the average-value series because it is calculated to eliminate the depressing effect of including in the average an increasing quantity of crudes which bore lower prices because they were of lower quality or were produced in fields more distant from the markets.[5]

Metal prices generally show sharp changes in response to war and shifts in the business cycle, but remarkable long-term stability (see Chart 9). It is possible that the last decade might be the beginning of an uptrend in relative price; rises during 1947-57 were fairly general. The earlier declines were largely attributable to iron and copper, which represent the majority of the weight in the index computation.

The nonfuel nonmetals group of minerals is a congeries of building materials, etc., many of which lack good long-term series, either because the commodity was developed late in our period or because there are severe problems of defining the commodity in terms of a fixed quality and location. Stone, the most important group in this sector, is perhaps the worst in this latter respect: Markets are largely local rather than national; qualities run from that of riprap to that of statuary marble; quotations on output of standard specifications are largely lacking. Nevertheless, some prices of standard commodities have been gleaned from the data, and some average-value computations are also offered in Tables MP-27 and MP-28.

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[4] Following are the 1954 costs per Btu of the principal fuels. Costs for other years can be calculated from the table on prices for each fuel, since the energy content of each fuel is nearly constant over time.

Petroleum	$2.77 per barrel of 5.8 million Btu	48¢/million Btu
Natural gas	$0.101 per 1,000 cu. ft. of 1.075 million Btu	9.4¢/million Btu
Bituminous coal	$4.52 per ton of 26.2 million Btu	17.3¢/million Btu
Anthracite	$8.52 per ton of 25.4 million Btu	33.5¢/million Btu

[5] Our index is a linked average of average values at the wells, treating each major field as producing a different crude. See notes to Table MP-4.

Output

The output of the extractive sector of the economy grew steadily, although retardation in the rate of growth occurred about the turn of the century (Chart 10). The total economy, however, grew much more rapidly, so that, as Chart 11 shows, the ratio of natural resource output to Gross National Product fell from 32% to 13% between 1900 and 1957.[6]

Most of the decline was due to the slower rate of growth in agriculture, which in the more recent years accounted for almost two-thirds of the value of all extractive materials. (See Chart 12.)

In agriculture, the decline in output relative to Gross National Product is not surprising. All but about 10% of agricultural output was related directly or indirectly to the consumption of food (Chart 13), and growth in food consumption followed population growth quite closely, despite some shifts to higher quality foods. National Product, however, rose much more than population.

The shift of the economy from a position of net exports approaching 12% of resource output to one of net imports of about 5% has been a further factor limiting the growth of output. The reader is referred to the section on Foreign Trade below for details.

The effects of the shifting patterns of consumption and of foreign trade can be seen in the wide differences in the growth of outputs of different sectors and of different commodities. The charts illustrating this growth (14-17) may be regarded as a caution as to the wide differences which are concealed by average rates of growth, whether for all resources or for a major sector.

Another caution regarding the information concealed by these broad summaries: The shift in trend may be very significant, as in the case of cotton output, illustrated in Chart 18.

[6] More accurate, but more difficult, would be a comparison of GNP with the movement of (deflated) value added to "net physical output," rather than this weighted sum of gross physical outputs. The latter includes some double counting, the GNP does not. The difference would be small, however. See p. 60.

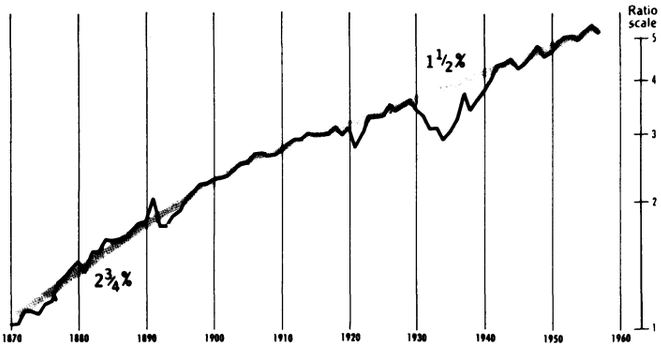


CHART 10. All extractive: output (1954 prices) (source: Table EO-1)

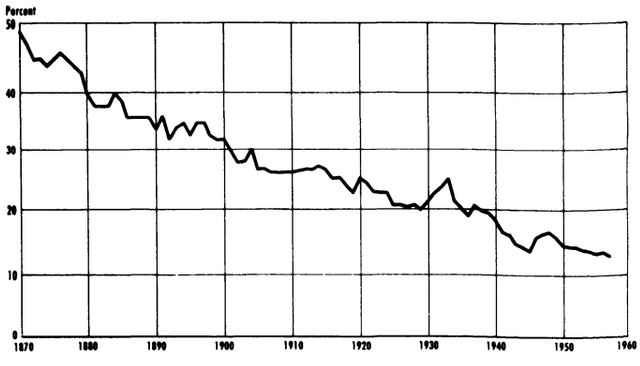


CHART 11. All extractive: output as percent of Gross National Product (1954 prices) (sources: Tables EO-1, N-3)

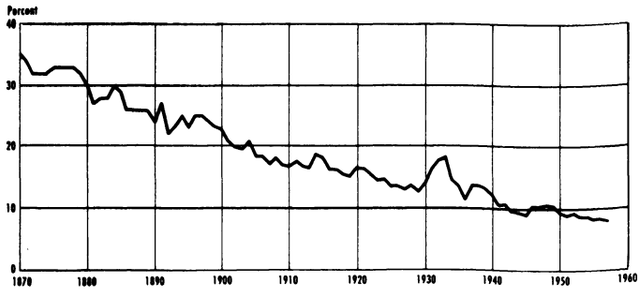


CHART 12. Agriculture: output as percent of Gross National Product (1954 prices) (sources: Tables EO-1, N-3)

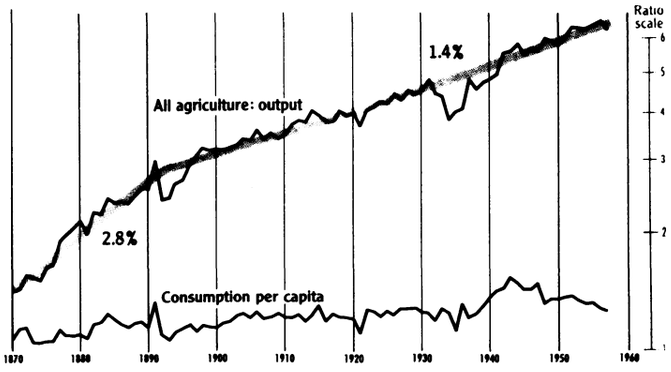


CHART 13. Agriculture: consumption per capita and output (sources: Tables AO-1, AC-5, N-2)

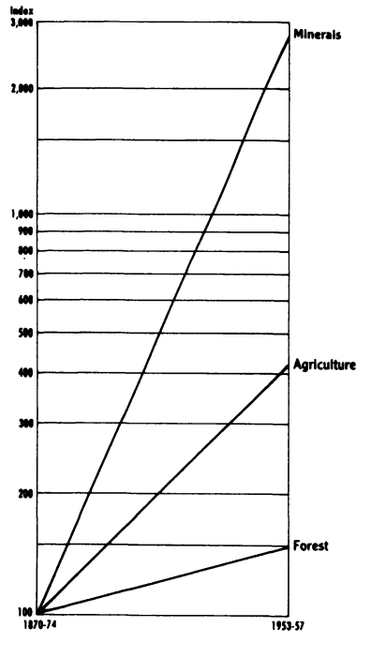


CHART 14. Extractive sectors: growth in output, 1870-1957 (1870-74 = 100) (sources: Tables MO-1, AO-1, FO-1)

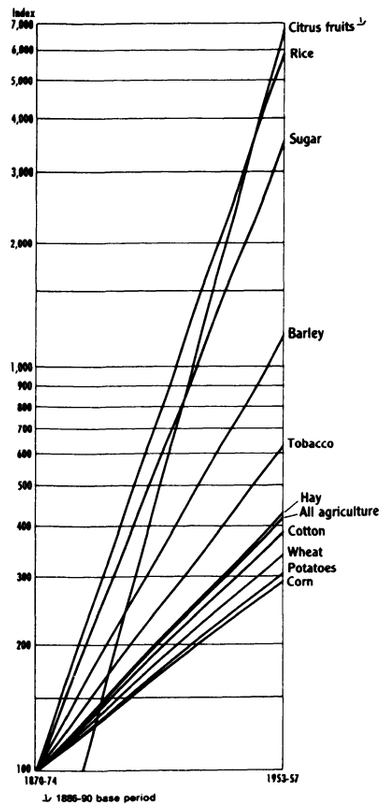


CHART 15. Crops: growth in output, 1870-1957 (1870-74 = 100) (sources: various AO tables)

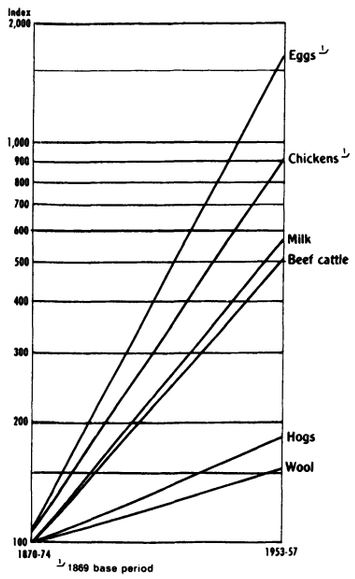


CHART 16. Animal products: growth in output, 1870-1957 (1870-74 = 100) (sources: various AO tables)

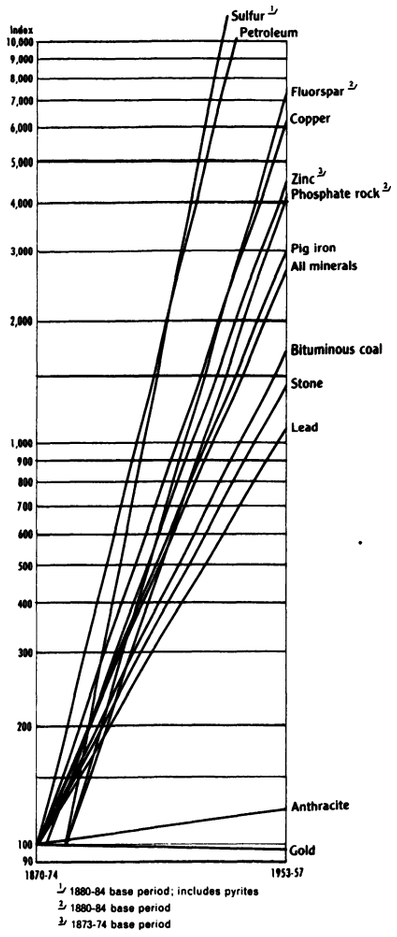


CHART 17. Minerals: growth in output, 1870-1957 (1870-74 = 100) (sources: various MO tables)

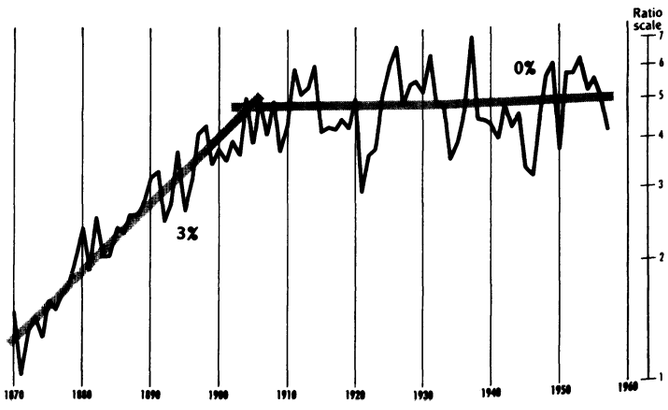


CHART 18. Cotton: output (source: Table AO-22)

The impact of the major differences in growth rates may be seen in a number of different ways as illustrated in Chart 19:

(1) The percentage composition of output, valued in 1954 prices, shown here for the years 1870, 1910, and 1954. The rapid growth in mining pushed it up from 5% of all resources output to over 28% by 1954; agriculture thus fell, relatively, from 72% to 64%, while forest and fishery products fell from 23% to less than 8% of all resources output.

(2) The distribution of "value added" by the productive activity in each sector. This takes into account not only the quantity of output but the changing valuation put on the output; it also deducts the cost of materials bought from other industries. Thus the chart shows a greater decline for agriculture as its use of materials (fertilizer, gasoline, etc.) increased. Its prices rose less than those of mining and timber after 1910. Forest and fish show a smaller decline than for output in constant prices, chiefly because lumber prices rose so much between 1870 and 1954.

(3) The activity of the industry in terms of its chief input, labor. This reflects the "size" of the industry plus the technological efficiency with which it uses labor. In these terms, agriculture dominates the resources picture more than it did that of value added or quantity of output. This is because the value added and the value of output per worker in agriculture were generally low.

It is instructive to analyze each resources sector, to show the important component commodities. Chart 20 shows the declining importance of cotton, wheat, and hogs in relation to all agriculture, and the growth of dairy products, other livestock, and miscellaneous crops. (Animal feeds are not included in this chart because their value is included in the output of livestock and products.)

The chart on mineral products (21) shows the dominance of the fuels throughout, and the increasing dominance which occurred with the passage of time.

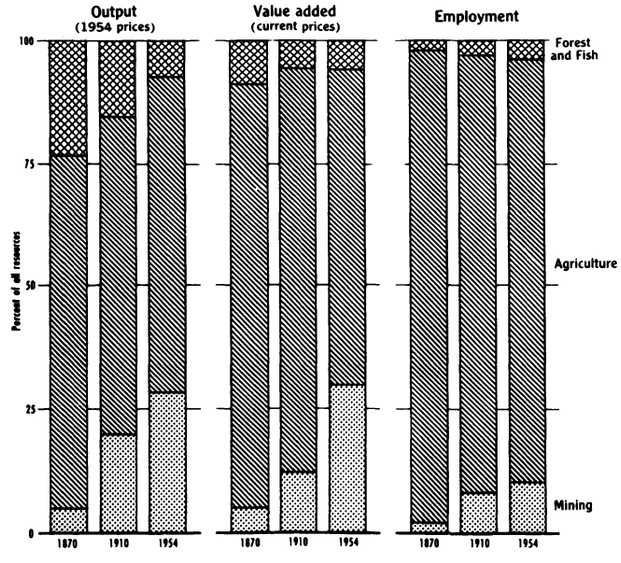


CHART 19. Extractive sectors: relative importance in output, value added, and employment, 1870, 1910, and 1954 (sources: Tables EO-1, EO-2, EL-1)

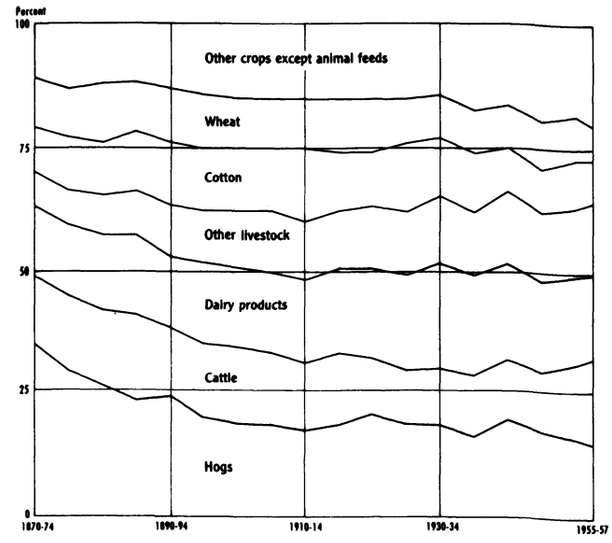


CHART 20. Agriculture: percentage composition of output (1954 prices; 5-year averages) (sources: Tables AO-1, AO-2, AO-27)

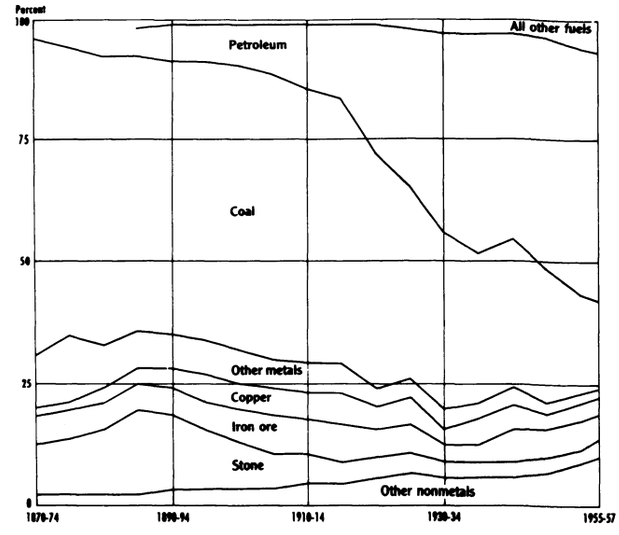


CHART 21. Minerals: percentage composition of output (1954 prices; 5-year averages) (sources: Tables MO-1, MO-2, MO-7, MO-20)

Consumption

Consumption differs from output in that imports are added and exports deducted. For some commodities, small or short-term differences also show up when account is taken of changes in stockpiles and of wastage.

Chart 22 shows the growth in aggregate use of resource materials, which occurred at a rate of 2.0% per annum over the 88-year period. Population grew at an average rate of 1.7% per year. Thus the per capita consumption of resource commodities grew at a rate of about ⅓% per year; most of the increase in aggregate consumption of resource materials resulted from the increase in population, and only about one-fourth from the rise in consumption per person.

Use of resource products grew most rapidly in the first half of the period 1870-1957; after about 1905, there was a tendency toward stability, broken only by the depression of the 1930's and a shift to a higher level of consumption at the time of World War II. (See Chart

23.) For agriculture, the principal resource industry, this pattern of growth in consumption is even more distinct. Per capita consumption grew at about ½% per year on the average; or we might describe the movement by noting a ½% annual growth to 1905, followed by a level trend to 1939, an upward jump of 20% between 1939 and 1943, and a tendency toward decline thereafter.

Among agricultural commodities, this pattern is most marked, as shown in Chart 24, in per capita consumption of cotton, tobacco, and meat animals. The movement of per capita consumption of other important farm commodities can be studied in the charts on individual commodities, below (pp. 19ff).

The abrupt changes in the rate of expansion in the per capita use of minerals and forest products about the turn of the century are worthy of note. In forest products, there was a moderate decline in per capita consumption until 1900, then a decline of 2% per year, which ceased with World War II (see Chart 23). These trend changes reflect the importance of lumber in the total index: pulpwood and plywood consumption continued a fairly rapid rate of growth to 1957—pulpwood at a rate of nearly 4% per year. In the early years, fuelwood also had a heavy influence on the index.

In minerals, the per capita rate of growth was about 4½% per year until about 1905, after which it ran 2% or 1½%. The accounting for this change is to be found in all three major sectors of minerals, as can be seen from Chart 25.

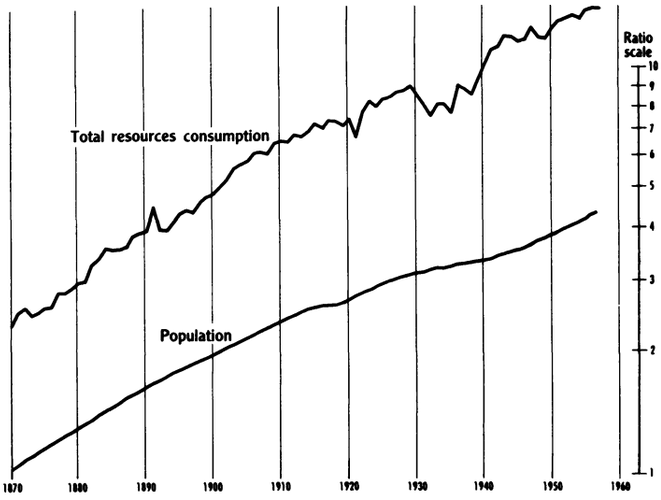


CHART 22. All extractive materials: total consumption and population (sources: Tables EC-2, N-2)

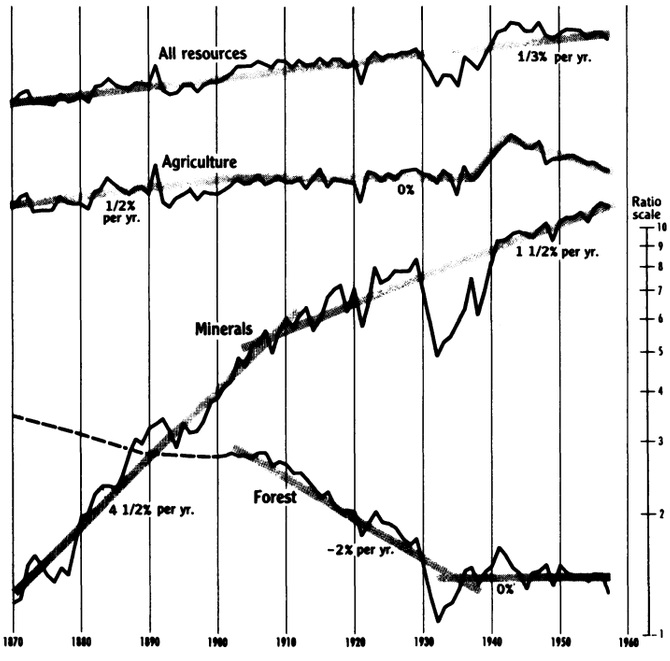


CHART 23. Resource sectors: per capita consumption (sources: Tables EC-2, AC-5, MC-2, FC-2, N-2)

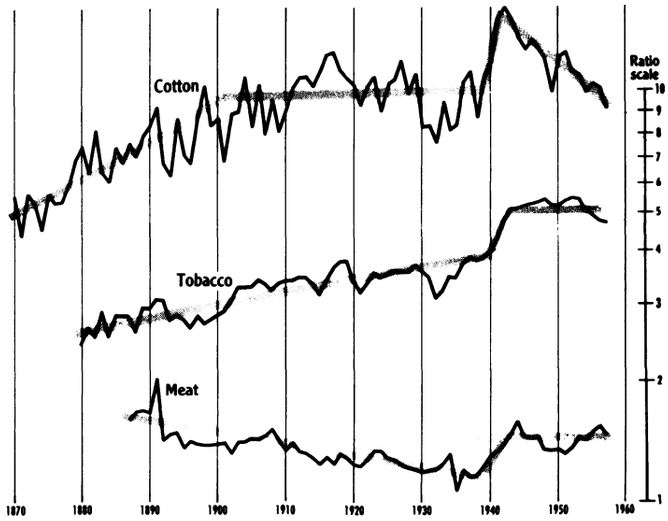


CHART 24. Agricultural commodities: per capita consumption (sources: Tables AC-12, AC-11, AC-14, N-2)

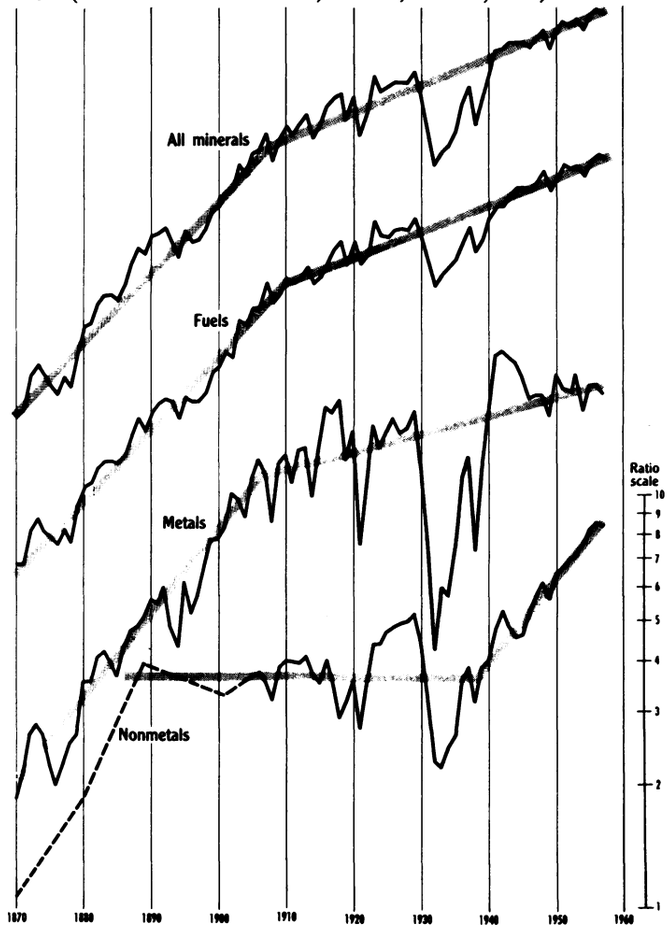


CHART 25. Mineral sectors: per capita consumption (sources: Tables MC-2, MC-4, MC-13, MC-32, N-2)

All the major fuels participated in this change of trend (see Chart 26)—the coals between 1910 and 1920, petroleum around 1923.[7] In the case of the coals, the trends shifted rather rapidly from growth to decline; the change in petroleum was from a growth rate of about 9% per year to one of about 3½% per year.

Within each sector of resources there were important shifts in the patterns of consumption. In agriculture (Chart 28) there were large increases in consumption of citrus fruits and sugar and moderate increases in consumption of tobacco and milk products, while wheat and pork consumption declined.

Among the minerals, the different groups—fuels, metals, and other—grew at nearly equal rates, amounting to about an eight-fold increase in per capita consumption over the 87-year period; but individual commodities varied greatly (see Chart 29). The increase in per capita consumption of petroleum was 214-fold; of copper, 22-fold; of lead, only 2-fold. For anthracite, there was a decrease in per capita consumption. The logic of these relationships is generally that the new materials made large (percentage) increases while the older materials made smaller ones in per capita consumption. The first petroleum well was drilled in 1859; the use of copper for electricity was developed in this period; but coal was an older fuel and developed few major new uses. The case of lead is somewhat different; though it is an "old" metal, its new uses—in tetraethyl lead, in storage batteries, in cable covering, and in radioactivity shielding—became dominant; but they did not save it from relative decline.

Chart 30 depicts the relationship between manufacturing output and minerals consumption. It will be noted here and in Chart 31 that there was considerable decline in the use of minerals in relation to manufacturing activity, beginning about 1910.

The sharp decline in metals consumption (Chart 31) is a reflection of the movement of the two principal metals, iron and copper (Chart 32), though other metals, except aluminum, followed a similar course.[8] From 1910-14 to 1953-57 the decline in the relationship (metal consumption divided by manufacturing output) was 55% in the case of pig iron and 35% in the case of copper. It appears that the continued rapid rise in manufacturing output after 1920 resulted from increased fabrication of materials—an "intensive" development in contrast to the "extensive" development of the nineteenth century.

The consumption of nonfuel nonmetals more nearly kept pace with manufacturing output, though the uses of the principal nonmetallic materials (stone, clays, and sand and gravel) are more related to construction than to manufacturing.

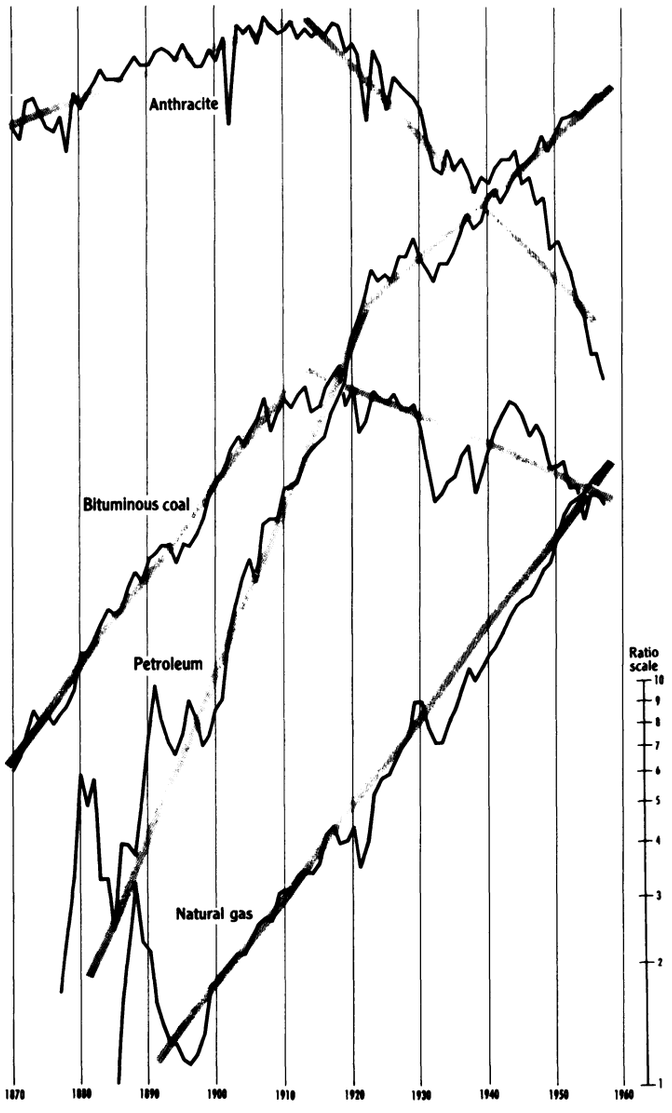


CHART 26. Mineral fuels: per capita consumption (sources: Tables MC-10, MC-11, MC-8, MO-4, N-2)

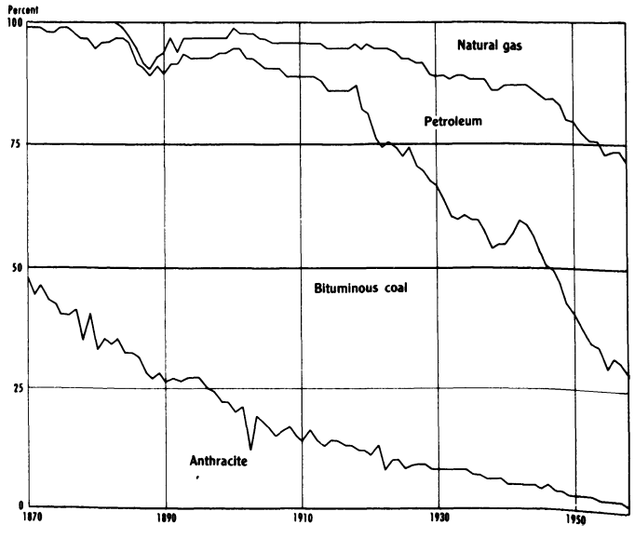


CHART 27. Mineral fuels: percentage composition of consumption (British thermal units) (source: Table MC-5)

[7] Natural gas did not produce as much as 10% of the value of fuel consumption in the period 1870-1957 and did not supply 10% of the energy consumed until the 1930's (Chart 27).

[8] Compare Tables N-4 (manufacturing), MC-17 (manganese), MC-18 (nickel), MC-24 (lead), MC-26 (zinc), and MC-30 (tin).

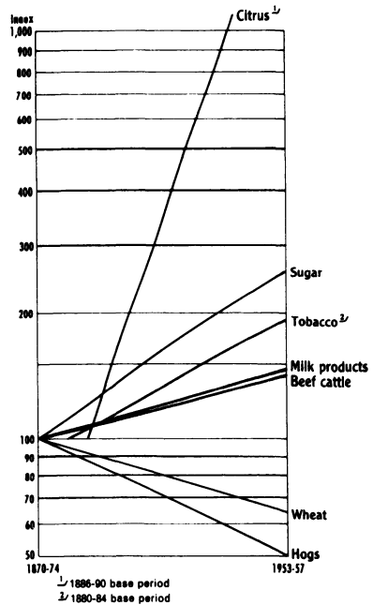
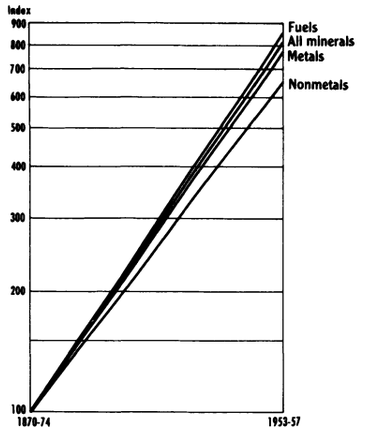
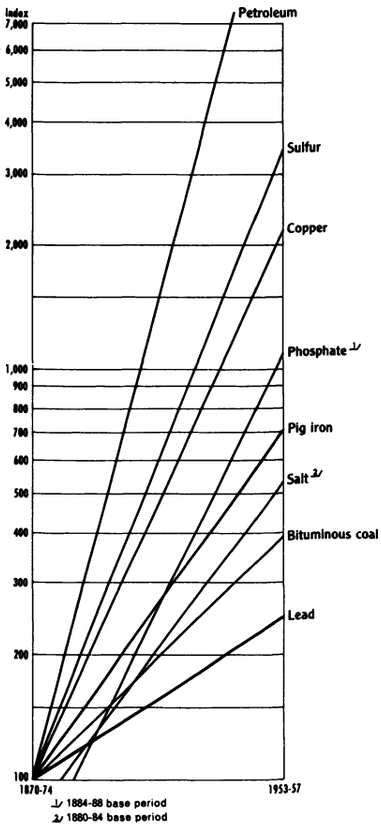


CHART 28. Agriculture: per capita consumption (1870-74 = 100) (sources: Tables AO-18, AC-10, AC-11, AO-36, AC-19, AC-7, AC-16, N-2)





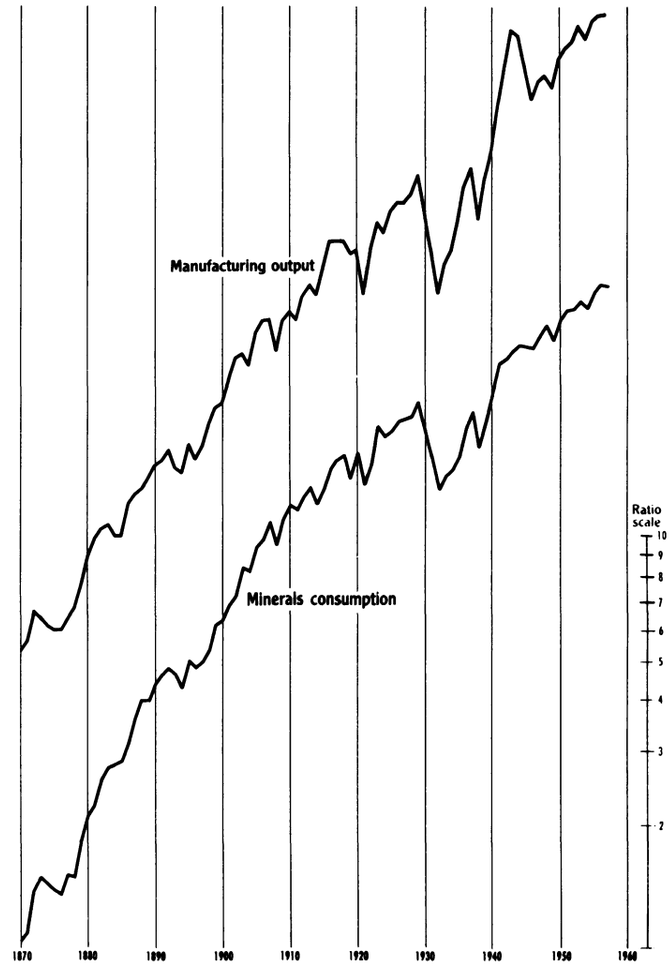


CHART 30. Minerals consumption with relation to manufacturing output (sources: Tables N-4, MC-2)

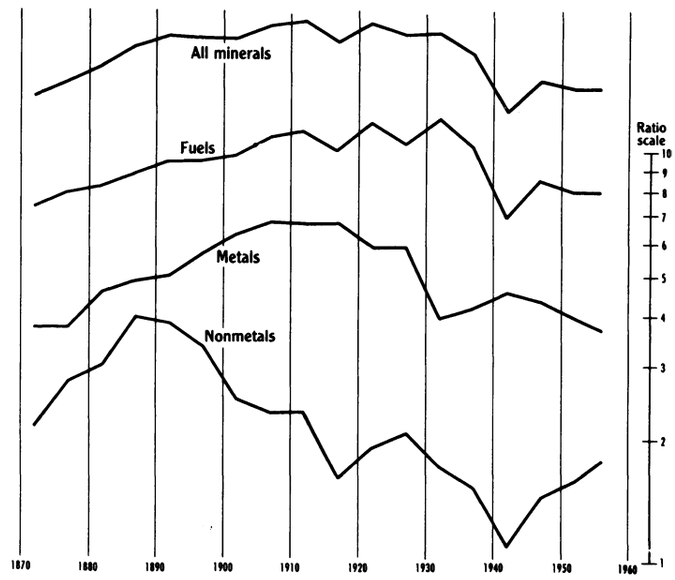


CHART 31. Minerals: consumption relative to manufacturing output (5-year averages) (sources: Tables MC-2, MC-4, MC-13, MC-32, N-4)

CHART 29. Minerals: per capita consumption (1870-74 = 100) (sources of upper chart: Tables MC-4, MC-2, MC-32, MC-13, N-2; of lower chart: Tables MC-8, MC-22, MC-37, MC-16, MC-35, MC-39, MC-10, MC-24, N-2)

The change in trend in use of minerals was about as great in relation to Gross National Product as it was to manufacturing (see Chart 33). The initial growth in consumption of minerals in relation to GNP was a little

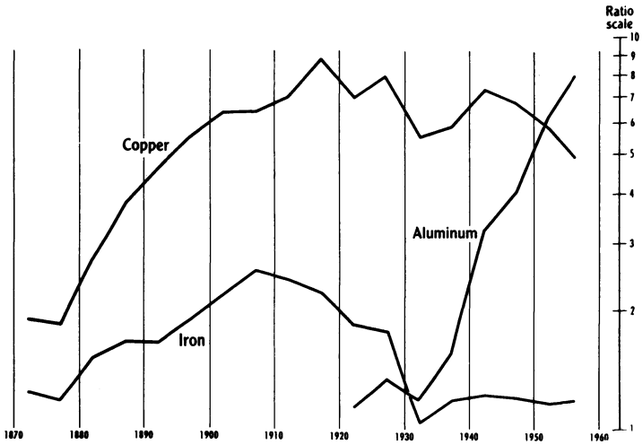


CHART 32. Metals: consumption relative to manufacturing output (5-year averages) (sources: Tables MC-22, MC-28, MC-16, N-4)

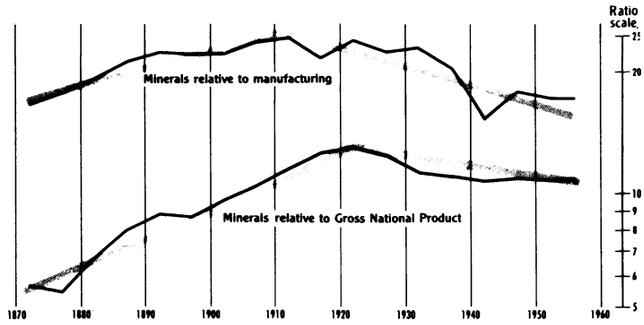


CHART 33. Minerals: consumption relative to manufacturing output and Gross National Product (5-year averages) (sources: Tables MC-2, N-4, N-3)

steeper, however, and the later decline somewhat less, because GNP grew a little less rapidly than manufacturing (cf. Tables N-3 and N-4).

Foreign Trade

Between 1870 and 1957, the U. S. balance of trade in resource materials, as shown in Chart 34, shifted from a position of net exports of about 12% of consumption to one of net imports of about 5% of consumption (valuing all resource commodities in 1954 prices).

The sharpest shift from exports to imports came in minerals (Chart 35), though the values involved were somewhat less than those involved in the trade in agricultural products (see Chart 37, drawn to same scale). The shift in minerals came entirely after 1939 and involved a drastic change in the previous trend.

The most important factor in the shift which occurred in agricultural commodities (Chart 36) was the failure of exports to expand as rapidly as the economy expanded; second in importance was the large expansion in the imports of "complementary" commodities—those not grown in the United States, like coffee, rubber, and bananas. Least important was the expansion of imports of "supplementary" or competitive imports at a rate greater than the rate of expansion of consumption of all agricultural commodities. These three factors are shown in Chart 37 and in Table 2.

TABLE 2. Agricultural Imports and Exports
($ billion, 1954 prices)

	1870-74 average	1953-57 average	1953-57 av. if exports & imp. had increased in proportion to all agric. consumption	Effect on net import balance (Col. 2 minus Col. 3)
Exports	1.19	3.49	5.72	+2.23[1]
Supplementary imports	.14	1.29	.65	+ .64
Complementary imports	.21	2.17	1.03	+1.14
Net agricultural imports	−.84	−.03	−4.04	+4.01

[1] The sign is reversed for exports: a relative decline increased net imports.

SOURCE: Table AC-1.

The chief commodities involved in the decline of agricultural exports were cotton, tobacco, and pork. Grain exports, though large and growing, did not outpace the growth of consumption. The largest of the "supplementary" imports was sugar, whose consumption grew so rapidly that its imports rose by a larger percentage than the all-agriculture consumption index, despite the fact that a growing proportion of the market was reserved for domestic growers by a quota system. Other important "supplementary" imports were apparel wool, cattle, and tobacco. Among "complementary" imports, the largest was coffee, during the entire period; rubber showed the largest relative increase—over a hundredfold.

In minerals (Chart 38), the chief items in the shift to net imports were petroleum, the ferroalloys, copper, and

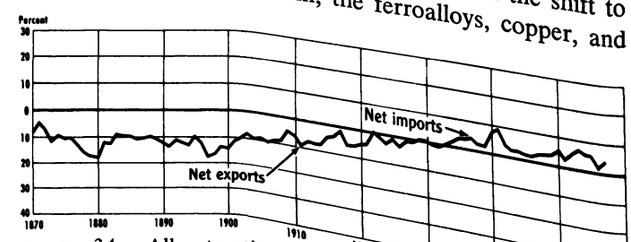


CHART 34. All extractive: net trade as percent of consumption (1954 prices—gold and silver excluded) (sources: Tables EC-1, EC-2)

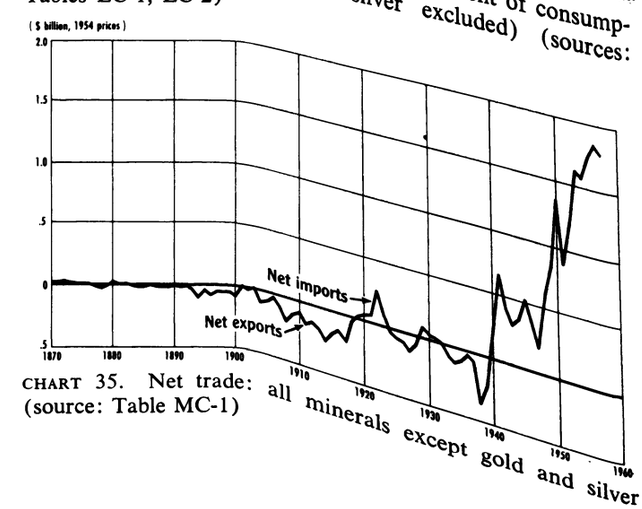


CHART 35. Net trade: all minerals except gold and silver (source: Table MC-1)

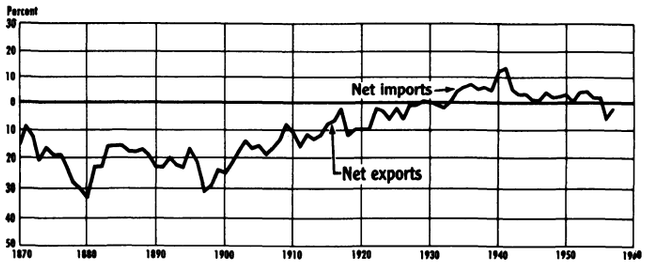


CHART 36. Agriculture: net trade as percent of consumption (sources: Tables AC-1, AC-5)

diamonds. Chart 39 shows the shift from exports to imports in mineral fuels[9] while Table 3 shows the principal items in all mineral exports and imports.

Table 3. Mineral Net Imports
($ million, 1954 prices)

	1870-74	1953-57
All minerals	–60	1700
Fuels	–13	500
Petroleum	–12	700
Bituminous coal	1	–150
Anthracite	–2	–30
Metals	–45	950
Gold and silver	–75	90
Alloy metals (manganese, nickel, tungsten, chromium, etc.)	2	260
Copper	0	200
Lead	9	115
Zinc	1	75
Iron	3	70
Nonmetals	10?	205
Diamonds	5?	180
Asbestos	0	57
Sulfur	1	–40

SOURCE: Tables MC-4, MC-12, and MC-31.

Of these markedly increased mineral imports, only those of nonferrous metals and perhaps petroleum may reflect a significant increase in scarcity (defined as the relation between demand and supply) in the United States; they also reflect, it should be remembered, increases in foreign supplies as new mines and oil fields were discovered. In petroleum and iron the imports were but a small percentage of consumption, though petroleum imports had a clear-cut upward trend, following a long-term downtrend in exports. For the chief alloy metals, diamonds, and asbestos, imports were always the most important source, since most of these commodities are nonexistent in this country, or available only at high cost.

Some interest attaches to the degree to which the nation is dependent on imports to supply its consumption of raw materials (and conversely, to how exports compare with consumption). Chart 40 summarizes the situation as of 1953-57.

[9] The fact that coal was a net export causes the all-fuel net import line to lie below the petroleum line.

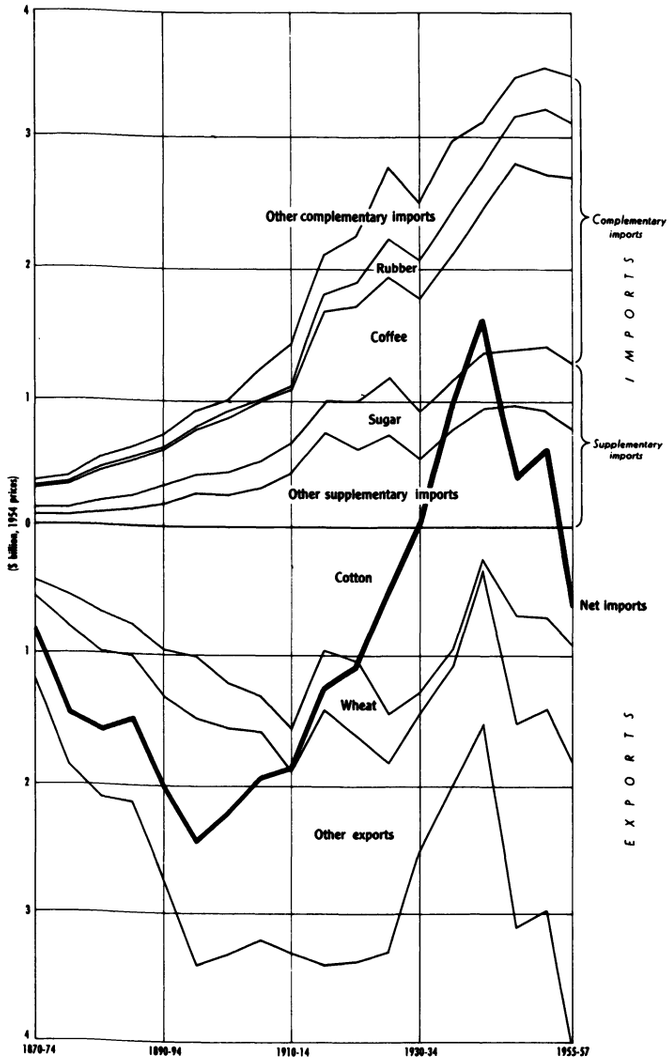


CHART 37. Agriculture: imports and exports (sources: Tables AC-1, AC-2, AC-3, AC-4, AC-26, AC-24, AC-9, AC-12, AC-7)

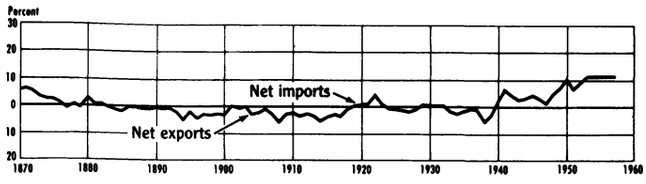


CHART 38. All minerals except gold and silver: net trade as percent of consumption (sources: Tables MC-1, MC-2, MC-13)

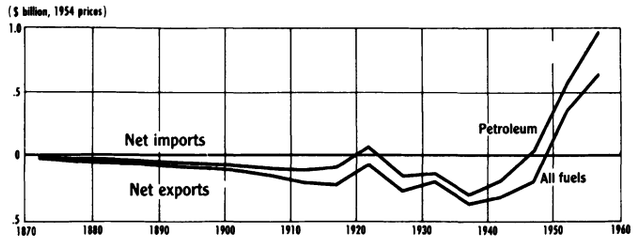


CHART 39. Mineral fuels: net imports (5-year averages) (source: Table MC-3)

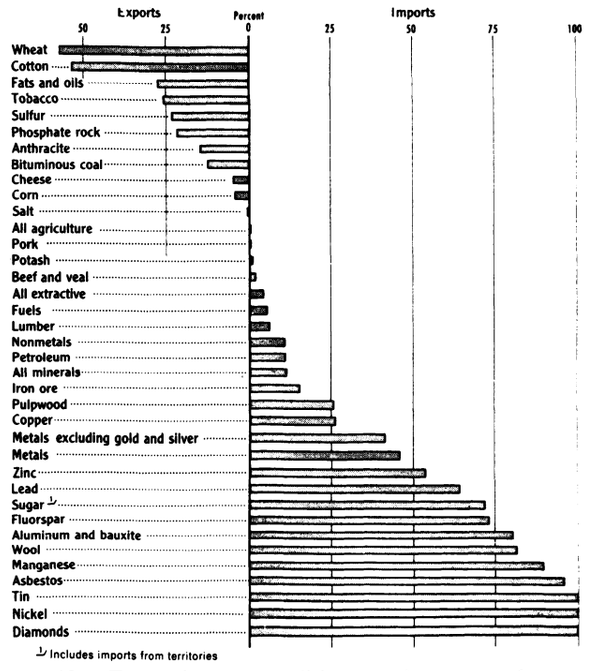


CHART 40. Extractive commodities: net imports and exports as percentage of consumption (1953-57 averages) (sources: various AC, FC, and MC tables)

Employment

Employment data offer an alternative to output data as a means of measuring the size and importance of the resources industries [10]; or they may be regarded as a means, alternative to price, of measuring the difficulty of supplying resource products.

It will be seen from Chart 41 that output of resources industries expanded much more than employment. In other words, the "productivity" of labor in the resources industries increased.

From Chart 42 it will be observed that employment in resources industries declined as a percentage of all employment; and that this percentage declined more rapidly than the ratio of resources output to all output (GNP). This more rapid rate of decline is an indicator of the resources industries' more rapid rise in average labor productivity.

10 See the discussion below, p. 59.

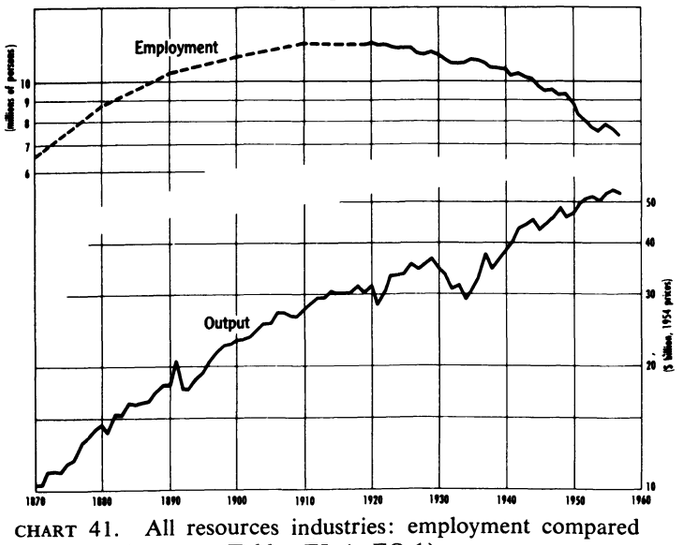


CHART 41. All resources industries: employment compared to output (sources: Tables EL-1, EO-1)

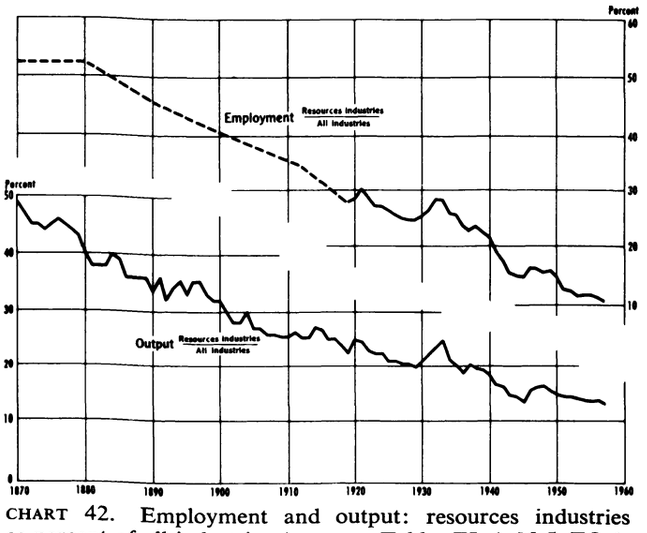


CHART 42. Employment and output: resources industries as percent of all industries (sources: Tables EL-1, N-5, EO-1, N-3)

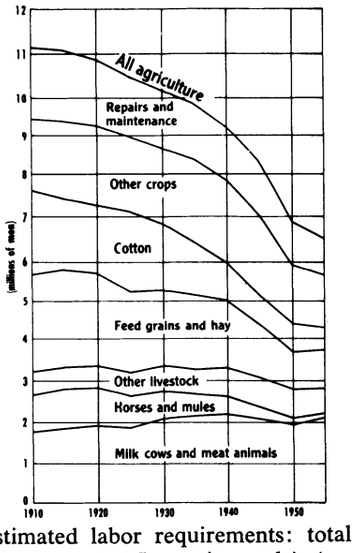


CHART 43. Estimated labor requirements: total agriculture and agricultural sectors (at 5-year intervals) (sources: Table AL-1 and *Agricultural Statistics 1959*, p. 492)

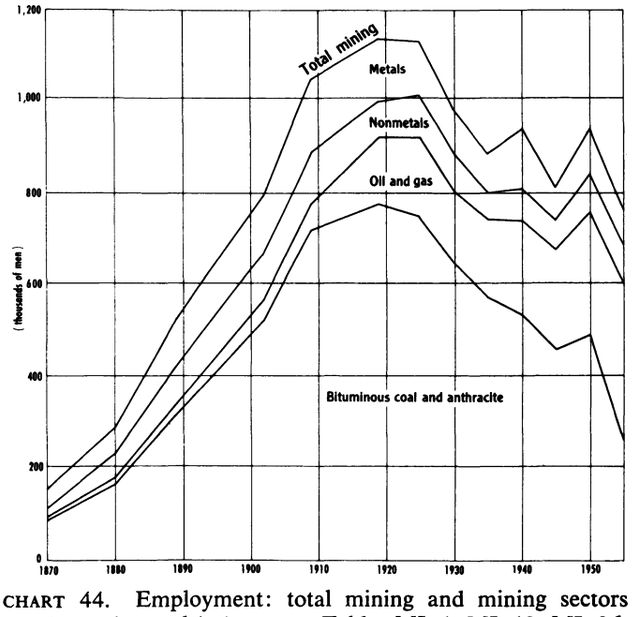


CHART 44. Employment: total mining and mining sectors (at 5-year intervals) (sources: Tables ML-1, ML-12, ML-26, ML-6, ML-8, ML-10)

Chart 43 shows the estimated labor input used for the various products of agriculture. It will be noted that a principal source of the decline in agricultural labor was the reduction in the labor required to care for horses and mules, with the accompanying decline in that required for feed crops. The tractor and other technological advances reduced the labor used for other crops, even though their output increased.

Chart 44 shows the breakdown of labor requirements in mining. The chief source of the rise and decline in mining employment was coal; it provided a majority of all mining employment until 1951. The nonfuel minerals provided small amounts of employment, though iron, copper, gold, and stone gave a considerable amount before 1900.

Employment per Unit of Output

Changes in the ratio of employment to output may be an indicator of increasing or decreasing resource scarcity, as posited in the famous writings of Malthus and Ricardo.[11] The theory is that as the pressures of scarcity rise it becomes worthwhile to work agricultural land more intensively to increase its output, and to bring into cultivation additional, poorer land, which yields less per man. In the case of mining, the principle would operate through resort to poorer ores, deeper wells, and more distant and inaccessible sources, as well as to more careful (less "wasteful") methods of mining. It could also be added that depletion of ores over time leaves less to be exploited, so that even without an expanding population the principle would lead to a rising ratio of employment to output, since poorer and deeper mines would be resorted to as the better mines were exhausted.

A glance at summary Chart 45 makes clear that the Malthusian principle in this simple form did not operate in the United States over the period 1870-1957. New discoveries and new technology more than nullified any tendency toward decreasing output per worker. Perhaps the great improvement in transportation also caused a shift to resources of greater productivity rather than less.

From Chart 46 it will be observed that employment/output ratios in resources industries not only declined, but declined by as much as those in manufacturing and somewhat more than those in the economy as a whole (employment per unit of Gross National Product in 1954 prices). Thus the resources industries not only experienced increasing rather than diminishing returns to labor, but failed to show any lag in relation to industries which had no problems of scarce resources. (Manufacturing, for example, starts not with resources of variable quality or scarcity but with materials which are brought to standardized qualities by the resource industries; these materials have been provided to the manufacturing industries generally without increases in relative price. See section on prices, above.) The reason might have been, of course, that technological advance was more rapid in the resource industries than in the other industries, so that if scarcities had any impact on resource-industry labor requirements, this impact was more than offset by that progress.

The universal technological advance, producing nearly universal decline in employment/output ratios, creates a problem similar to that of the nearly universal rise in prices. Since all employment/output ratios fall (as all prices rise), the interest moves away from the absolute to the relative. The interesting question is not whether particular ratios rise or fall but how much they fall. To answer this we need a reference standard, somewhat like the general wholesale price index for prices. Those ratios which fell more than the reference standard would then appear on our charts as declining from the horizontal; those which lagged in their decline woud then show a rise.

The reference standard we have chosen is employment/output in manufacturing. Our choice is based not only on the availability of relatively good annual manufacturing data but on the following considerations: (1) Manufacturing is presumably not affected by increasing scarcity or declining quality of natural resources as noted above. (2) It produces material goods, as do the resource industries, and therefore it has a greater similarity to them than do the trade or service industries in the degree to which it is affected by technological developments.

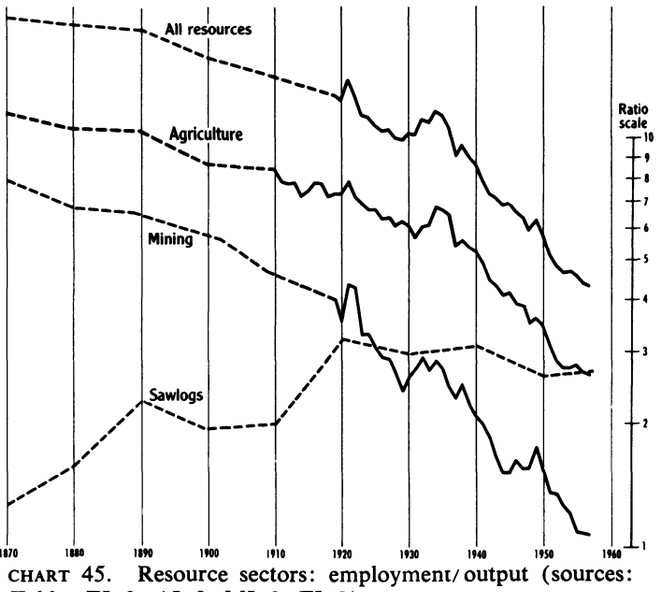


CHART 45. Resource sectors: employment/output (sources: Tables EL-2, AL-2, ML-2, FL-2)

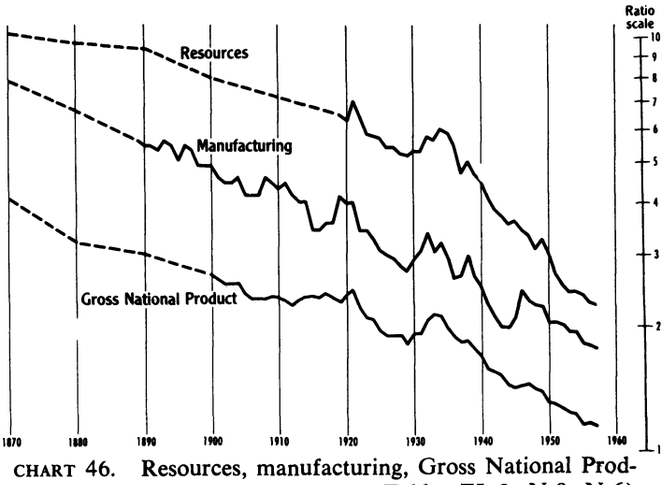


CHART 46. Resources, manufacturing, Gross National Product: employment/output (sources: Tables EL-2, N-8, N-6)

[11] For a review of theories, classic and modern, as well as a more extensive analysis of the statistical facts, see Barnett and Morse, *op. cit.*

Charts 47-51 show "relative" employment/output ratios —that is, they show the ratios of employment to output in the various resources industries, divided by the corresponding ratio (year by year) for the manufacturing industry. Chart 47 shows this transformation for all resources and for the major sectors; it corresponds exactly to Chart 45, showing "absolute" employment/output. It will be seen that while Chart 45 showed employment/output ratios declining for all sectors except timber, this one shows nearly horizontal lines for all sectors except timber, which rises steeply. We also can observe that all sectors showed some relative improvement after the 1930's, with timber rising less steeply and agriculture shifting from an uptrend to a downtrend. The shift in trend for mining is relatively minor.

The timber series thus seems to reflect scarcity. We can also see some appearance of this situation in livestock, as shown in Chart 48 (data separating livestock and crops are available only for the period since 1910). While there is no clear line between "livestock land" and "crop land," crops have always required cultivation while cattle (if not other livestock) were formerly left free on open range, with little labor devoted to either the animals or the land. Thus a scarcity of livestock land appears to have manifested itself in a rising employment/output ratio for meat animals.

Technological changes have, however, affected different crop and livestock lines quite differently, and it seems probable that these technological changes have been principally responsible for the different rates of decline in employment/output for crops and livestock products as well as among different crops, such as grains and tobacco.

The impact of the agricultural revolution which began in the late 1930's is clearly reflected in Chart 49; an examination of detailed Table AL-3 will indicate that every group of crops except fruits and nuts went through an accelerated decline in employment/output from about 1935 to 1957. Among the livestock enterprises, only poultry shows such a change clearly, although dairy products (not charted here) have shown it to some extent.

Minerals show a declining employment/output ratio, not only as a group (see Chart 47) but also for each major sector (see Chart 50). When we look at each of the fuels separately, however, the trends seem level or upward (relative to manufacturing) since about 1930. The reason for the decline of the all-fuels index is the growth in the oil and gas industry as compared to that of the coals; the product per worker is about three times as great in petroleum as in coal, when products are compared in terms of their 1954 prices.

Among the metals also there appears to have been a slowing of the rate of decline in employment/output ratios around 1930; note the lines in Chart 51 on iron and copper, which constituted 75% of the value of all metals output in 1954.

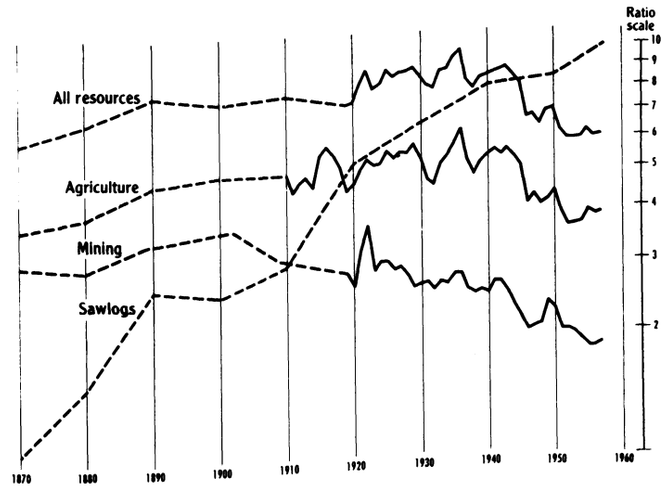


CHART 47. All resources and major sectors: employment/output relative to manufacturing (sources: Tables EL-2, AL-2, FL-2, ML-2, N-8)

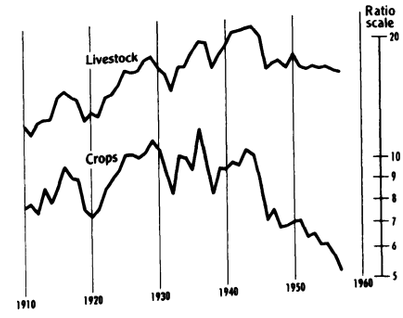


CHART 48. Agricultural sectors: employment/output relative to manufacturing (sources: Tables AL-4, AL-3, N-8)

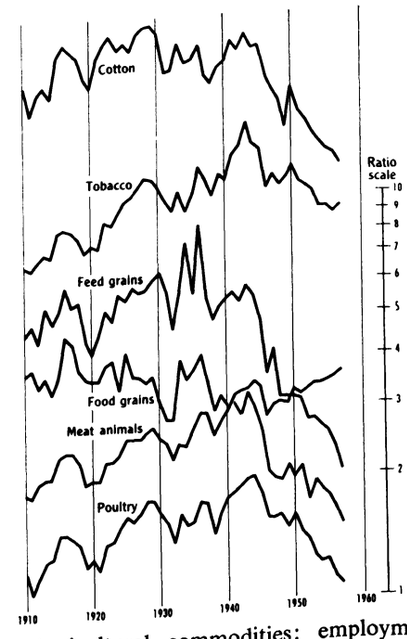


CHART 49. Agricultural commodities: employment/output relative to manufacturing (sources: Tables AL-3, AL-4, N-8)

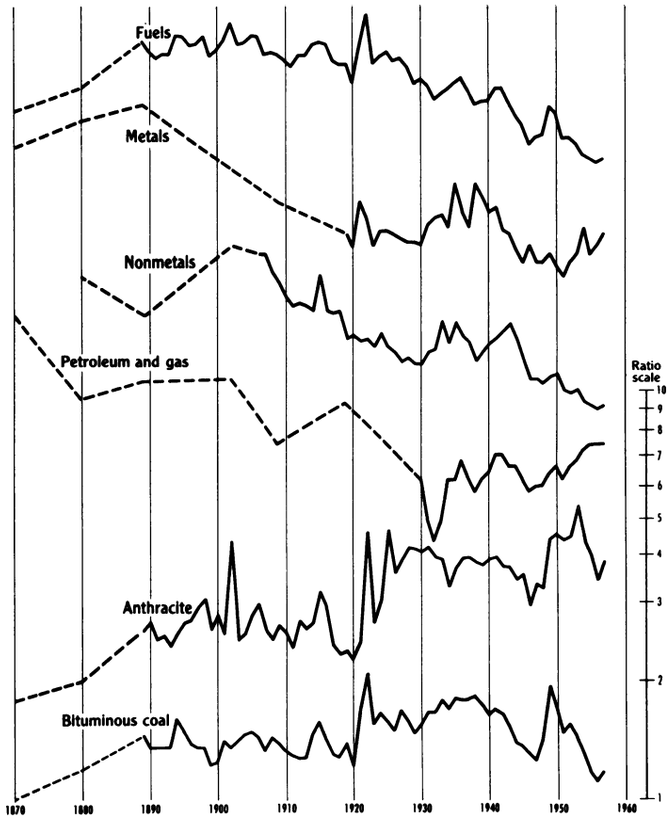


CHART 50. Minerals: employment/output relative to manufacturing (sources: Tables ML-5, ML-13, ML-27, ML-7, ML-11, ML-9, N-8)

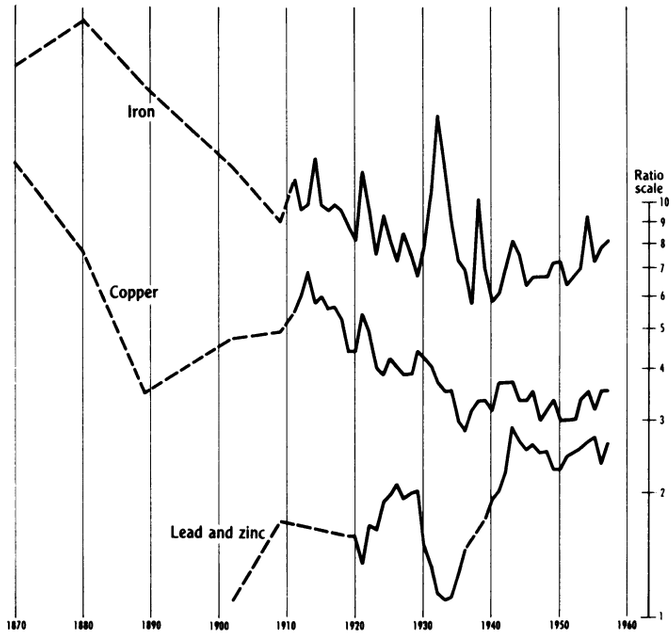


CHART 51. Metals: employment/output relative to manufacturing (sources: Tables ML-15, ML-19, ML-21, N-8)

Summaries for Principal Commodities

The following pages provide quick summaries of our data on the principal resource commodities over the 88-year period of our study. To make these summaries as simple and easy to grasp as possible, we have adopted certain uniform treatments of the data which should be understood before the charts are used:

(1) All charts, and all lines on each chart, are drawn to a uniform logarithmic vertical scale, shown beside each of the charts. There is thus no zero line. The base, or "100" line, is different for the relative price, the relative employment/output ratio, and the per capita output and consumption lines. The output and consumption lines, when both occur, have the same base line, so that the difference between the two is a sort of representation of foreign trade in the commodity being charted: When output is higher than consumption, the difference is exported or added to stocks. When output is below consumption, imports or reductions in stocks are drawn on for the difference.

(2) The horizontal or time scales are all the same.

(3) All the measures are related to the economy as a whole, in some sense or other, so the reader will usually be able to make evaluations without referring to other series, or having to make side calculations.

Price is "relative price," or the preferred series from the relevant table in the body of the book, deflated by the Bureau of Labor Statistics general wholesale price index (see Table N-1). A rise on the chart thus represents a rise in relation to the general level of prices, and not just an apparent rise because of a loss in the average purchasing power of money. Also, it is important to remember that a rise sometimes represents constancy in the commodity price at a time when the BLS index falls—for example, see anthracite coal in 1921.

Employment/output ratio is related to the changes in the same ratio in manufacturing. That is, estimated employment used in producing the resource commodity is divided by output of the commodity; and this ratio is divided by the corresponding ratio for manufacturing as a whole (Table N-8). A rise in the line on one of these charts thus represents a fall in the employment-to-output ratio which was less rapid than the decline in manufacturing. Here and there, for short periods, it represents an absolute as well as relative rise in employment/output. A fall of the line represents a decline which was more rapid than the decline in manufacturing (or, occasionally, less of a rise).

Output and Consumption data are divided by population (Table N-2). A rise thus represents an increase in production or use of the commodity which is more rapid than the increase in the population. The product of the per capita output and the population is the absolute increase in output. When per capita output declines slightly, it may of course represent a rising total output which lags behind the increase in population.

Wheat

The relative measures for wheat show remarkable long-term stability, despite considerable year-to-year fluctuations. However, labor per bushel fell 60% more than in manufacturing after 1910; in absolute terms, employment/output dropped 84%. After World War II relative price declined much less than relative employment/output ratio; part of the reason was no doubt the government price-support programs.

The generally lower level of consumption than of output is an indicator of the substantial net exports of wheat (both measures are drawn to the same scale and base line).

The peak in consumption in 1943 was due to considerable use for making alcohol and for animal feed. Following the war there was a large build-up of stocks and substantial exports, both dominated by government programs. Food use of wheat declined rather steadily, about 45% between 1910 and 1957. (See U.S. Department of Agriculture: *Consumption of Food in the U.S.*, Agricultural Handbook No. 62, 1953.)

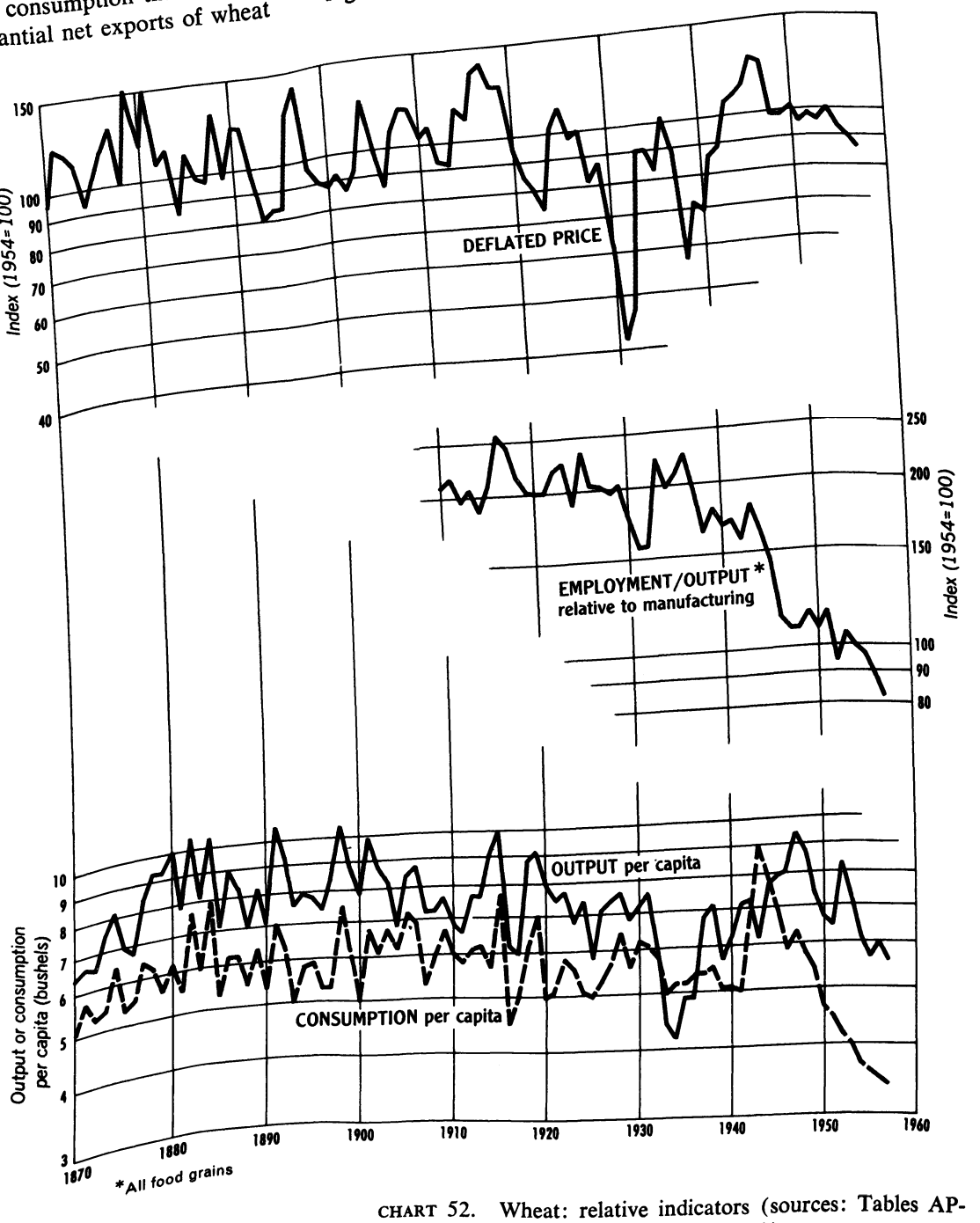


CHART 52. Wheat: relative indicators (sources: Tables AP-3/N-1; AL-3/N-8; AO-9 and AC-6/N-2)

Corn

Corn, the chief feed grain, experienced such wide price movements that a trend is hard to discern. Employment/output ratio of feed grains did, however, decline at a much steeper rate than that for manufacturing, from the mid-thirties to 1957.

Exports, while fairly persistent, were always small in relation to domestic consumption; additions to stocks were considerable after World War II, but still small compared to consumption. Per capita output declined with consumption after the turn of the century, as the use of horses diminished.

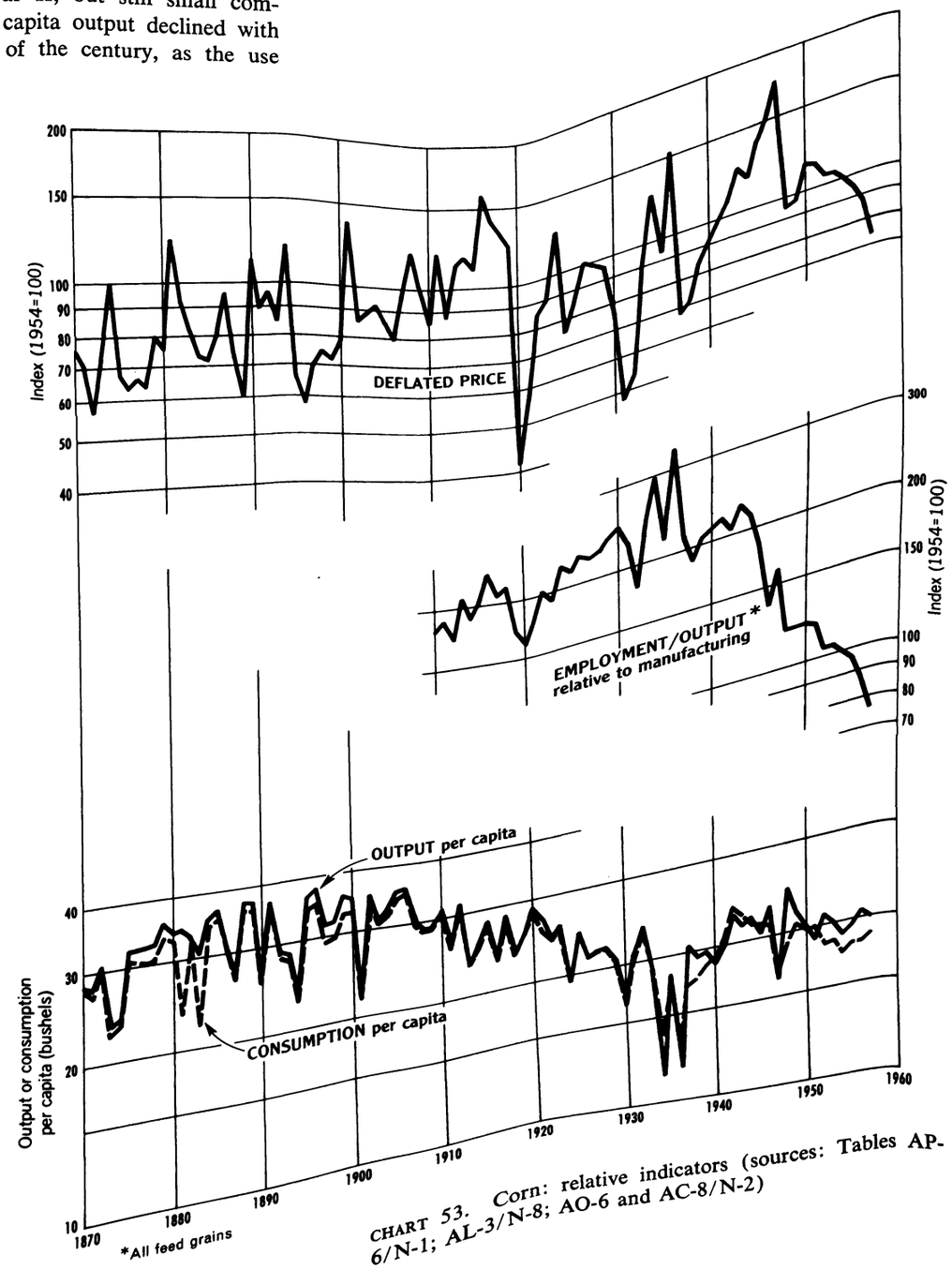


CHART 53. Corn: relative indicators (sources: Tables AP-6/N-1; AL-3/N-8; AO-6 and AC-8/N-2)

Hay

The decline in relative price after 1910 is perhaps understated because of a rise in average quality. The decline in employment/output, being no greater than the decline in manufacturing, is less than that for most farming.

Since foreign trade in hay is negligible, the output series may be used as a measure of consumption as well. The decline in per capita consumption after 1900 was due to the decline in number of horses.

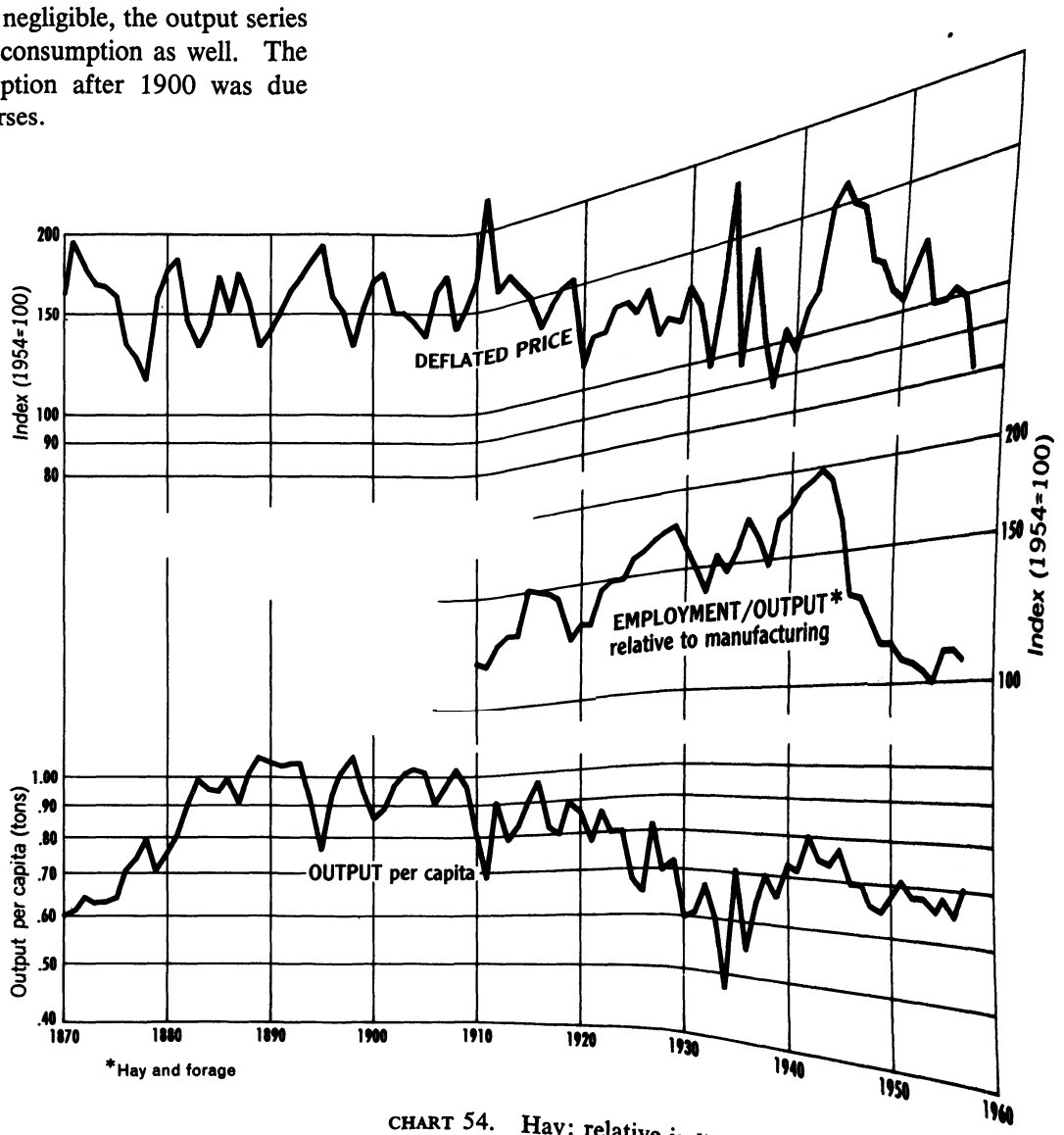


CHART 54. Hay: relative indicators (sources: Tables AP-10/N-1; AL-3/N-8; AO-10/N-2)

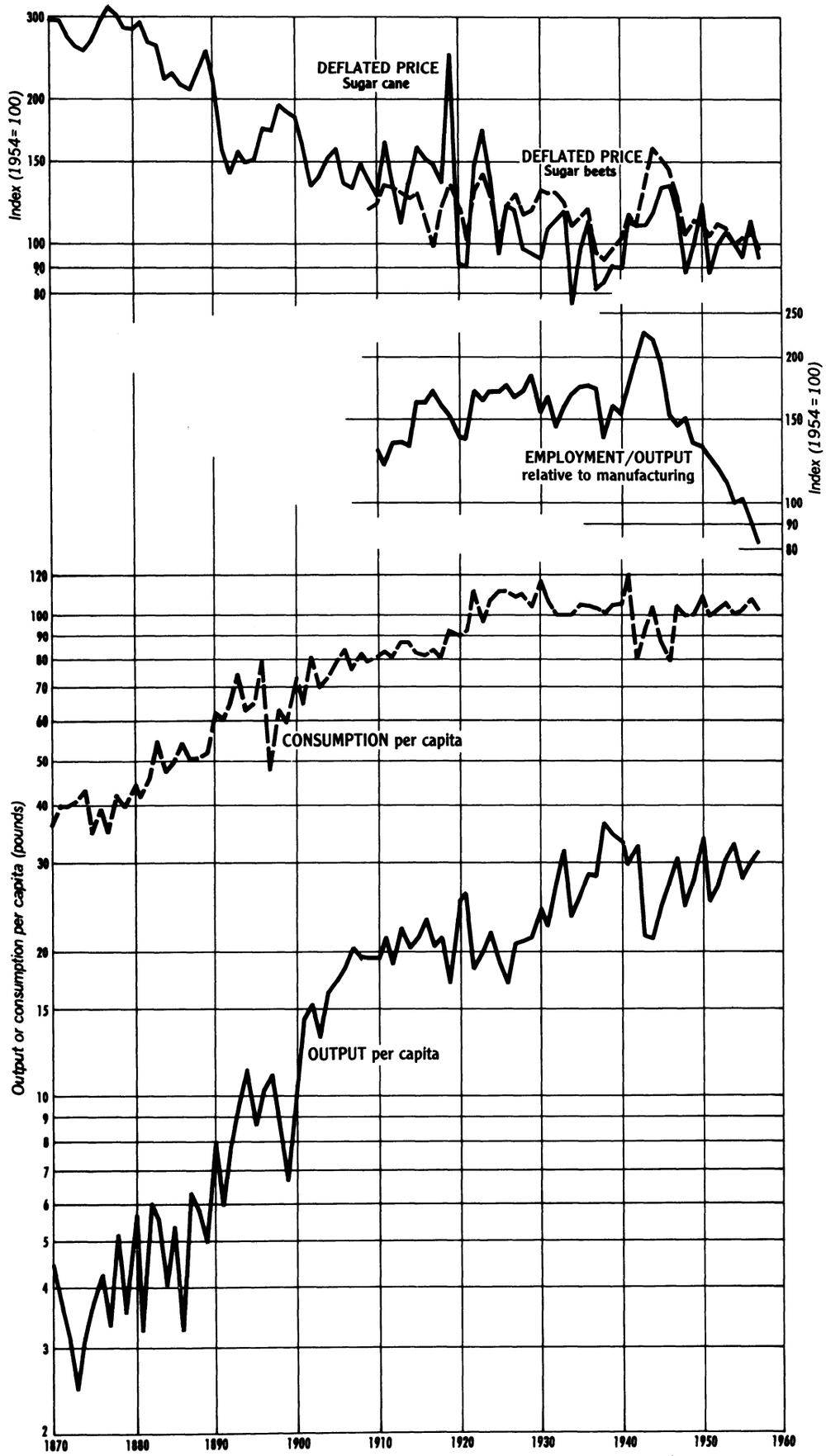


CHART 55. Sugar: relative indicators (sources: Tables AP-17 and AP-18/N-1; AL-3/N-8; AO-20 and AC-10/N-2)

Sugar

The decline in relative price is understated because of a quality improvement: The average sugar yield per ton of cane rose about 20% between 1909 and 1957. A corrected price series might drop as much as 50% instead of the 30% shown here for 1909-57; the price of raw sugar dropped about 45%. (Table AP-17, Col. A.) For sugar beets, which show slightly less drop in price than does cane, there is paradoxically less gain in the amount of sugar produced per ton of material—only about 10% from 1909 to 1957.

The wide difference between consumption and output is a reflection of net imports, since these two measures are drawn to the same scale and base line. Output includes only sugar produced in the continental United States; therefore imports include sugar from Puerto Rico, Hawaii, etc.

Tobacco

This illustrates an unusual case, of rising relative price and output (though the absolute employment-to-output ratio fell nearly 50% from 1910 to 1957). The narrowing space between per capita output and consumption depicts the relatively (though not absolutely) declining exports. (Output estimates are on a farm sales weight basis, consumption estimates on an unstemmed equivalent basis.) Per capita consumption rose considerably more than for the average agricultural commodity.

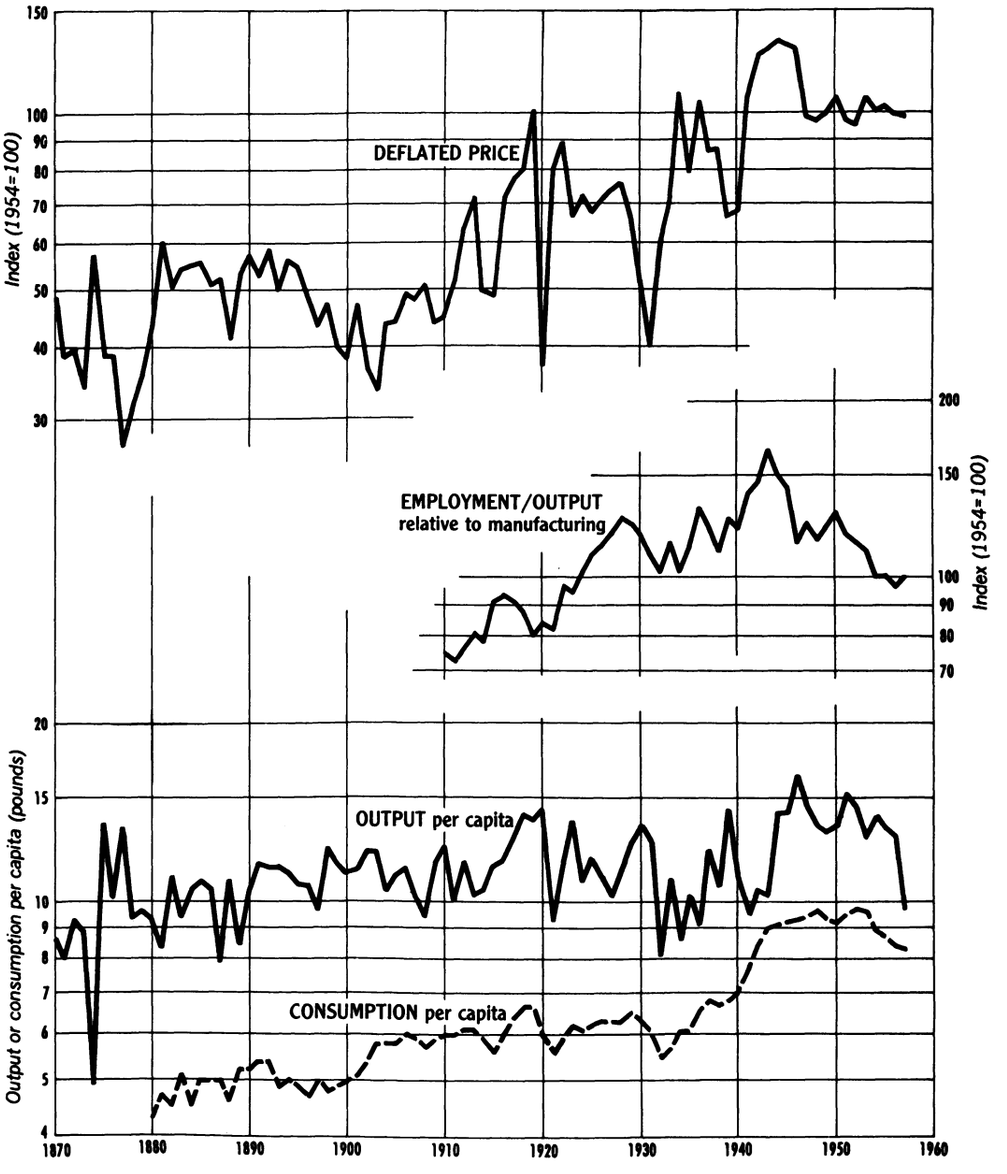


CHART 56. Tobacco: relative indicators (sources: Tables AP-19/N-1; AL-3/N-8; AO-21 and AC-11/N-2)

Cotton

From 1910-14 to 1953-57, relative employment/output fell about 20%, while relative price rose 10-15%. The reduced gap between per capita output and consumption represents an absolute as well as relative (per capita) reduction in exports. Since additions to stocks as well as exports are included in the difference between output and consumption, the decline in exports is somewhat understated, for there were considerable additions to stocks after 1952.

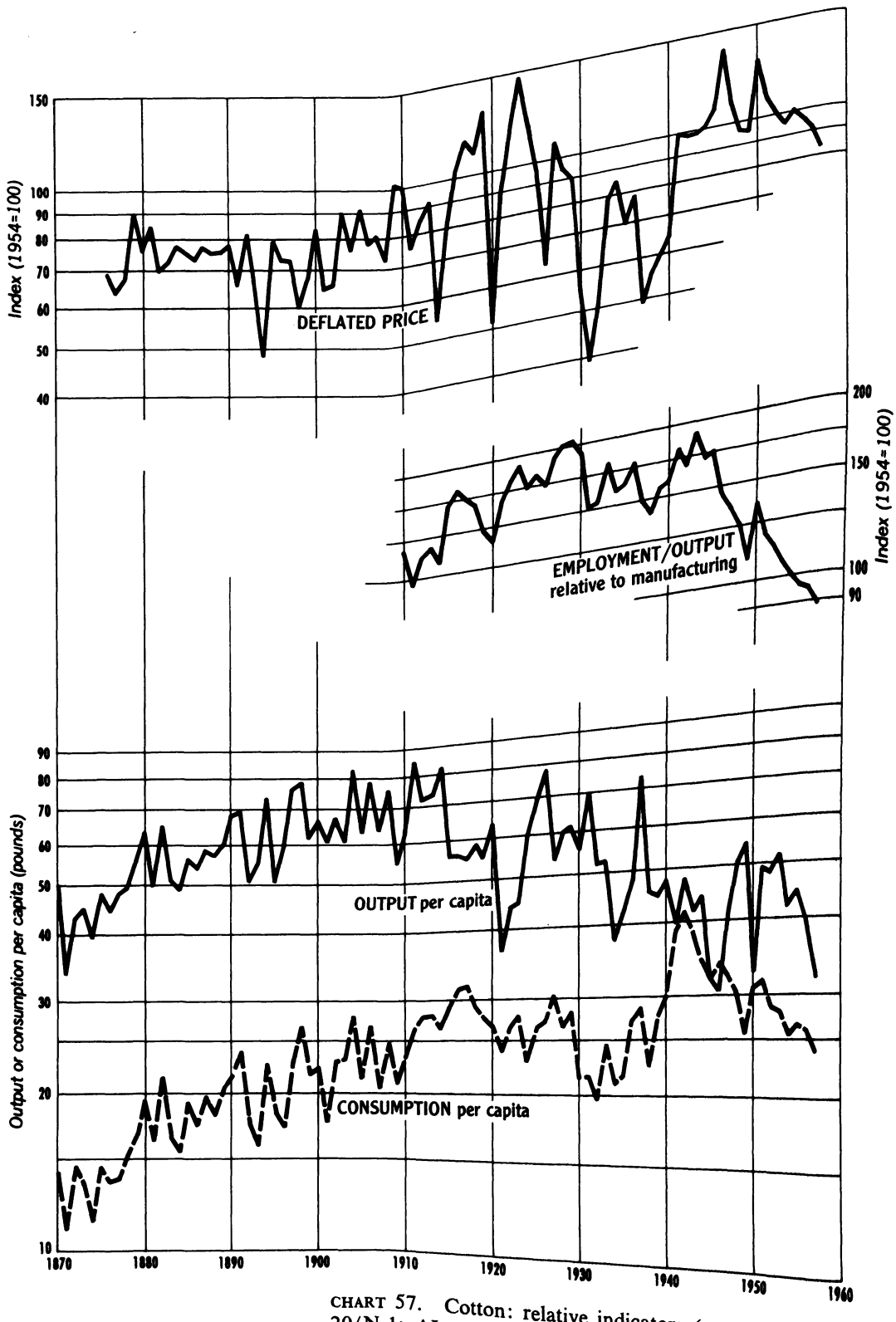


CHART 57. Cotton: relative indicators (sources: Tables AP-20/N-1; AL-3/N-8; AO-22 and AC-12/N-2)

Cattle

The upward trend in relative price is paralleled by the general upward trend in the ratio of employment to output for meat animals (including hogs and sheep as well as cattle). The position of moderate net exports of the later nineteenth century shifted to one of minor net imports in the 1930's and 1950's as indicated by the relative positions of the output and consumption lines.

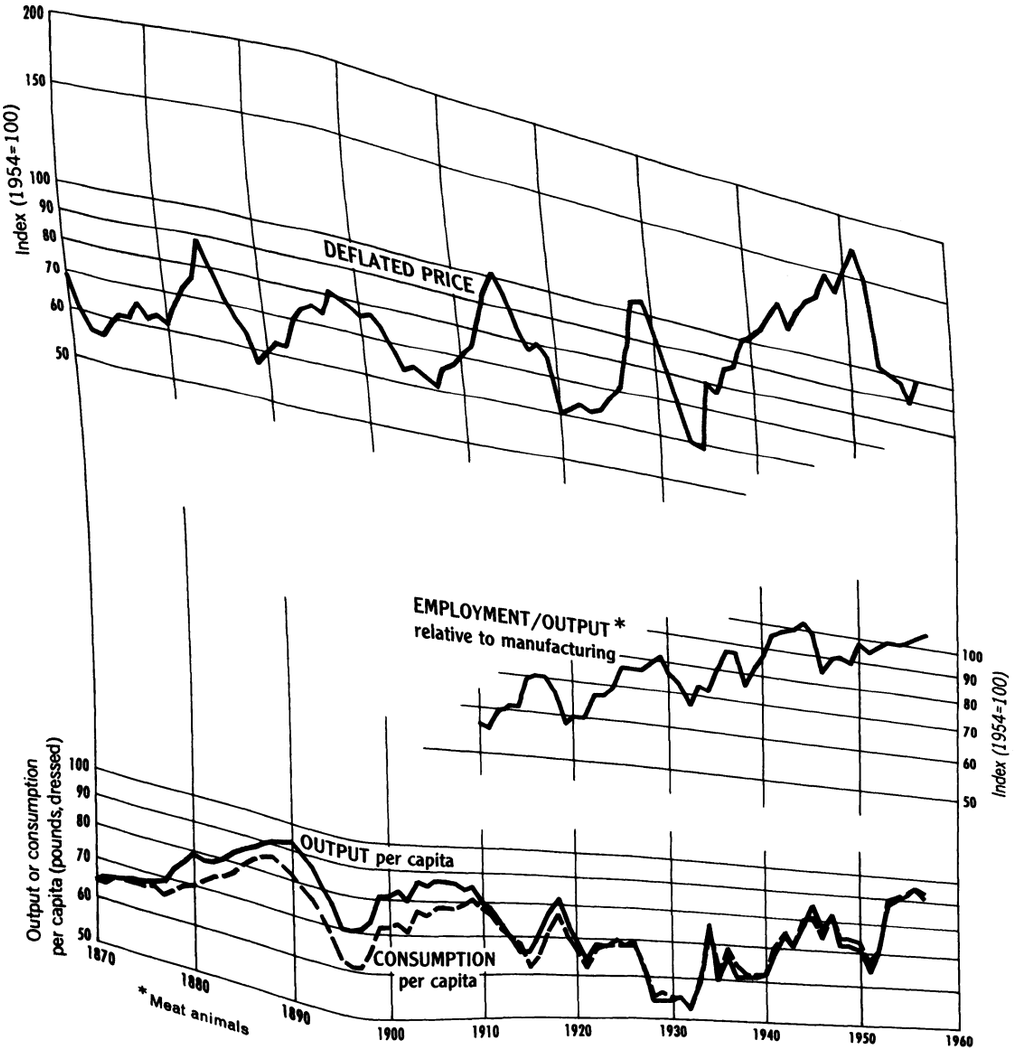


CHART 58. Cattle: relative indicators (sources: Tables AP-29/N-1; AL-4/N-8; AO-30 and AC-19/N-2)

Hogs

The rising trend in relative price seems to have ended about 1910; the rising relative employment/output ratio for meat after 1910 may not have applied to hogs, or other factors may account for the lack of a parallel between the two series. Net exports persisted until 1952, but the balance after that year was on the side of a very small net import.

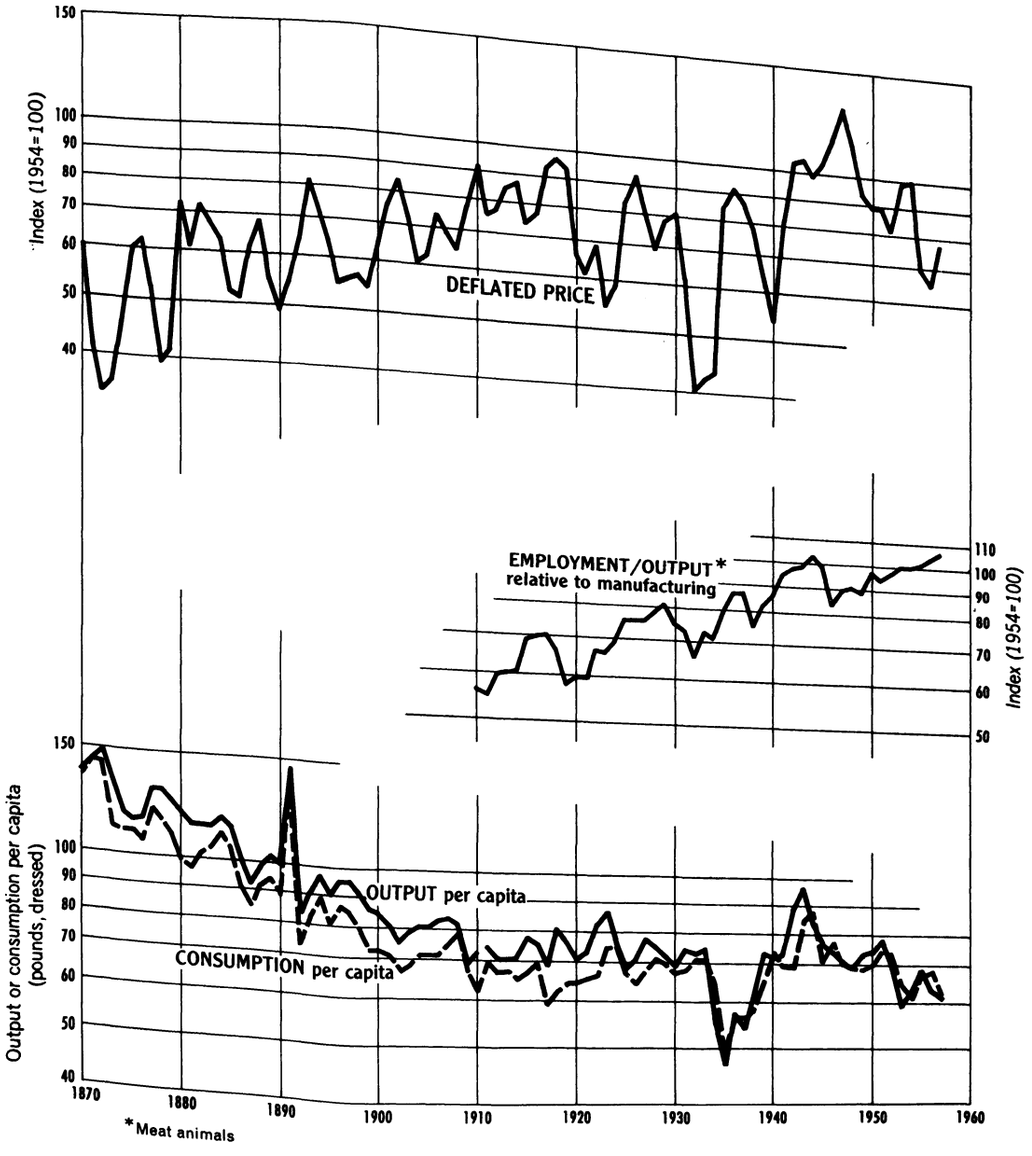


CHART 59. Hogs: relative indicators (sources: Tables AP-28/N-1; AL-4/N-8; AO-28 and AC-16/N-2)

Chickens

Between the 1930's and 1957 the location of chicken production for meat shifted from 95% farm to over 80% commercial broiler establishments. This brought a substantial reduction in employment/output, a dramatic change in the trend of price, and a sharp upturn in output, which is approximately equal to consumption.

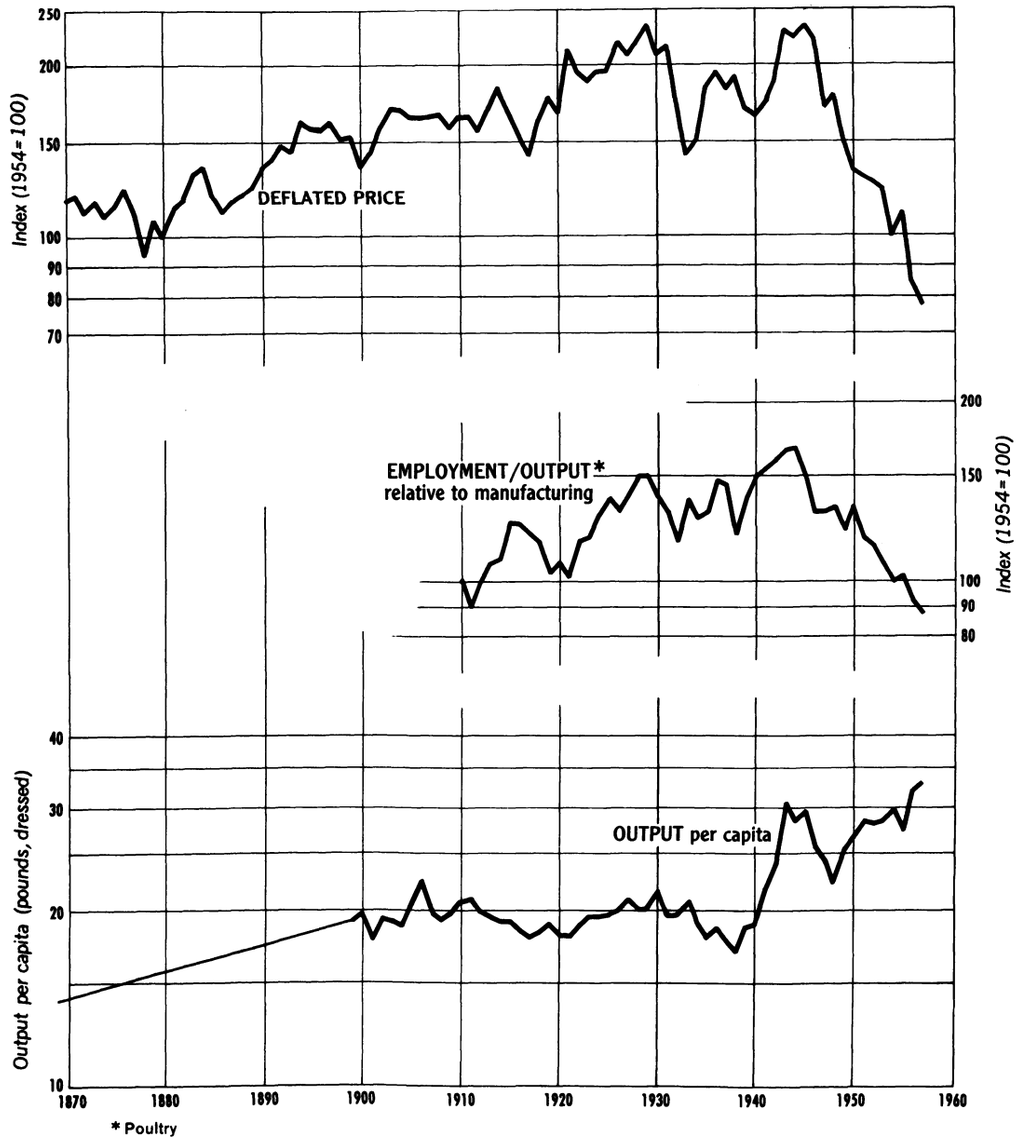


CHART 60. Chickens: relative indicators (sources: Tables AP-31/N-1; AL-4/N-8; AO-32/N-2)

Eggs

There was not such a dramatic shift in the methods of production of eggs as of chickens for meat, so the trends are more continuous. There is, however, a general similarity to the chickens picture in movement of the three lines in Chart 61, with relative price and employment/output showing almost no net change over the periods for which there are data, and with per capita output showing considerable growth.

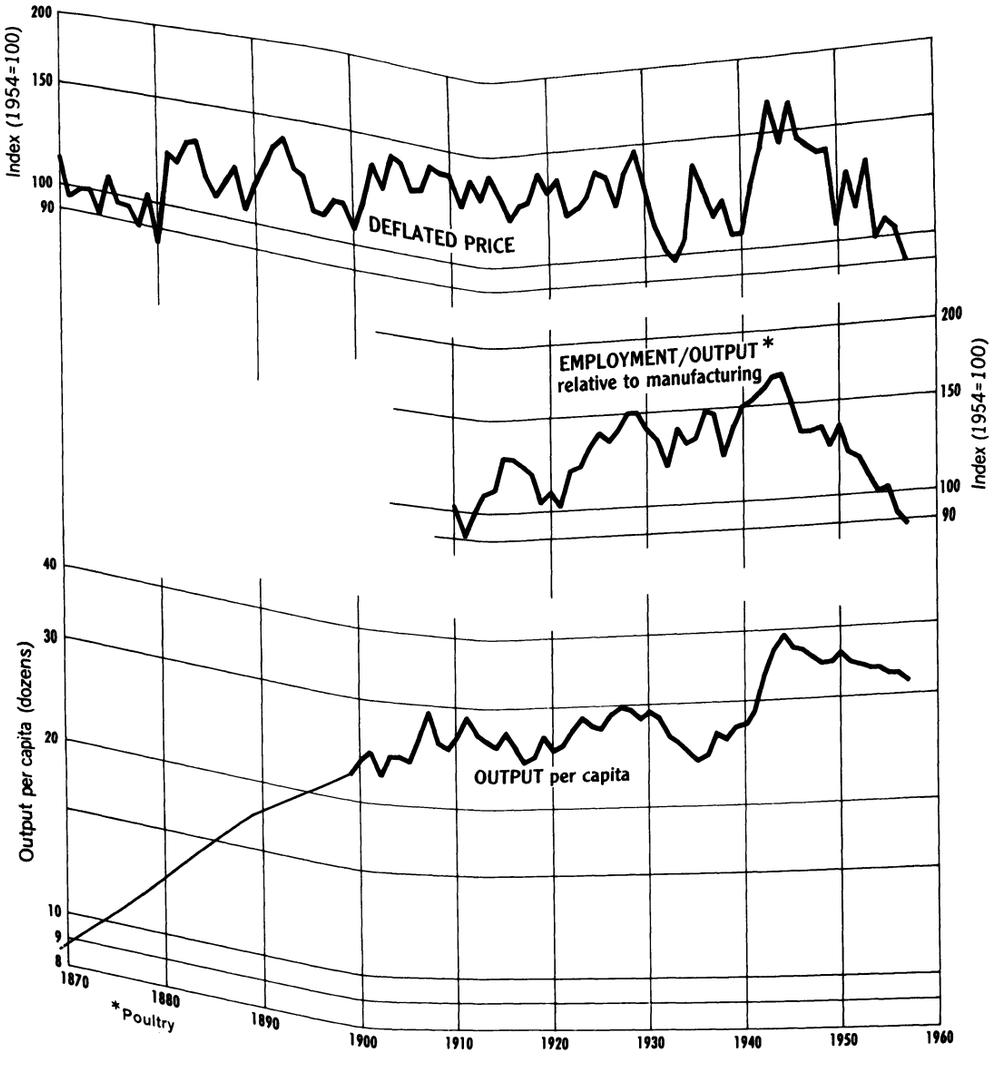


CHART 61. Eggs: relative indicators (sources: Tables AP-32/N-1; AL-4/N-8; AO-33/N-2)

Wool

The United States imported much of its wool throughout the period, as indicated by the higher level of consumption than output (these two lines are drawn to the same scale and base line). In earlier years about half was carpet (coarse wool), which has always been free of duty. In the more recent years increasing proportions were apparel wool, despite a protective tariff. The price index covers only domestic wool, which is all of apparel grade.

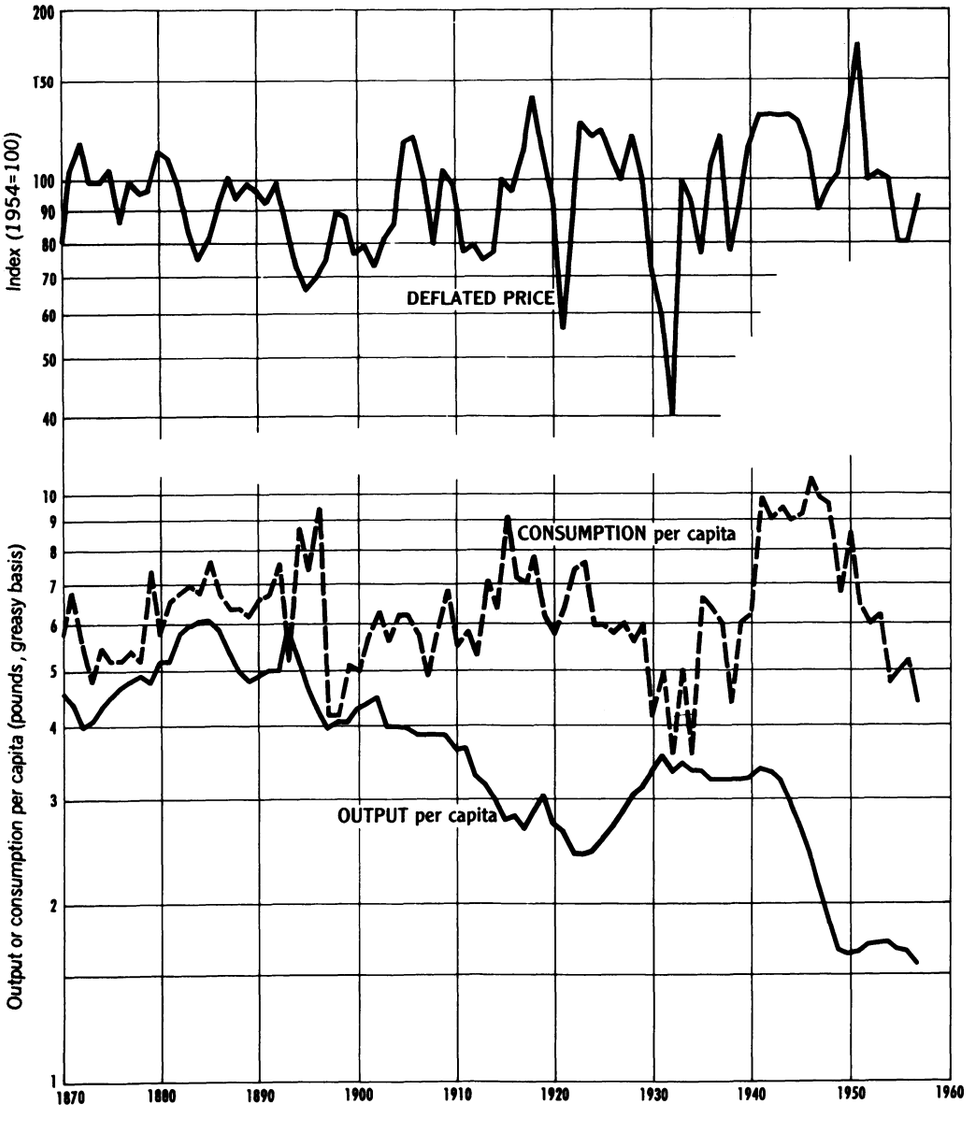


CHART 62. Wool: relative indicators (sources: Tables AP-39/N-1; AO-39 and AC-23/N-2)

Lumber

Lumber represents a classic case of increasing scarcity. This picture seems to emerge as a clear and valid one, despite certain difficulties with the data, particularly those for employment. The rise in price may be understated, because the shift of the industry from the East to the West Coast puts the output (priced at the mill) farther from the market. The rise in employment/output, on the other hand, may be overstated, because the coverage of employment may have improved in recent years in relation to output.

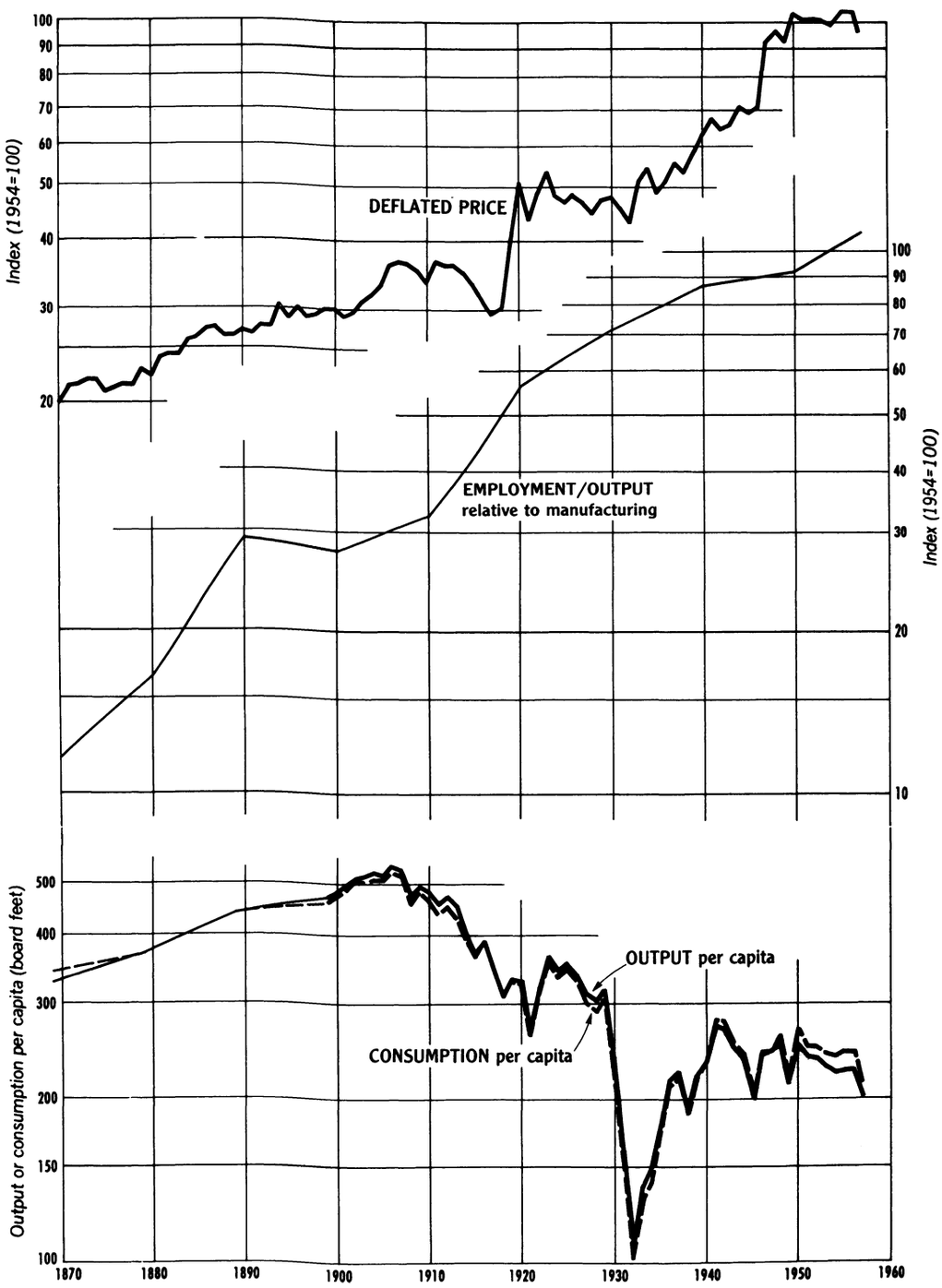


CHART 63. Lumber: relative indicators (sources: Tables FP-2/N-1; FL-2/N-8; FO-2 and FC-3/N-2)

Pulpwood

The contrast between the lumber and pulpwood pictures is surprising. While there are no useful data on the employment/output ratio for pulpwood, the price series indicates little or no rise, and the output and consumption series show a steep and steady rise. Imports, indicated by the higher level of consumption as compared to output, were large for the entire period when data were available. The bulk of the imports entered in the form of newsprint; paper and pulp are included here at their pulpwood equivalents.

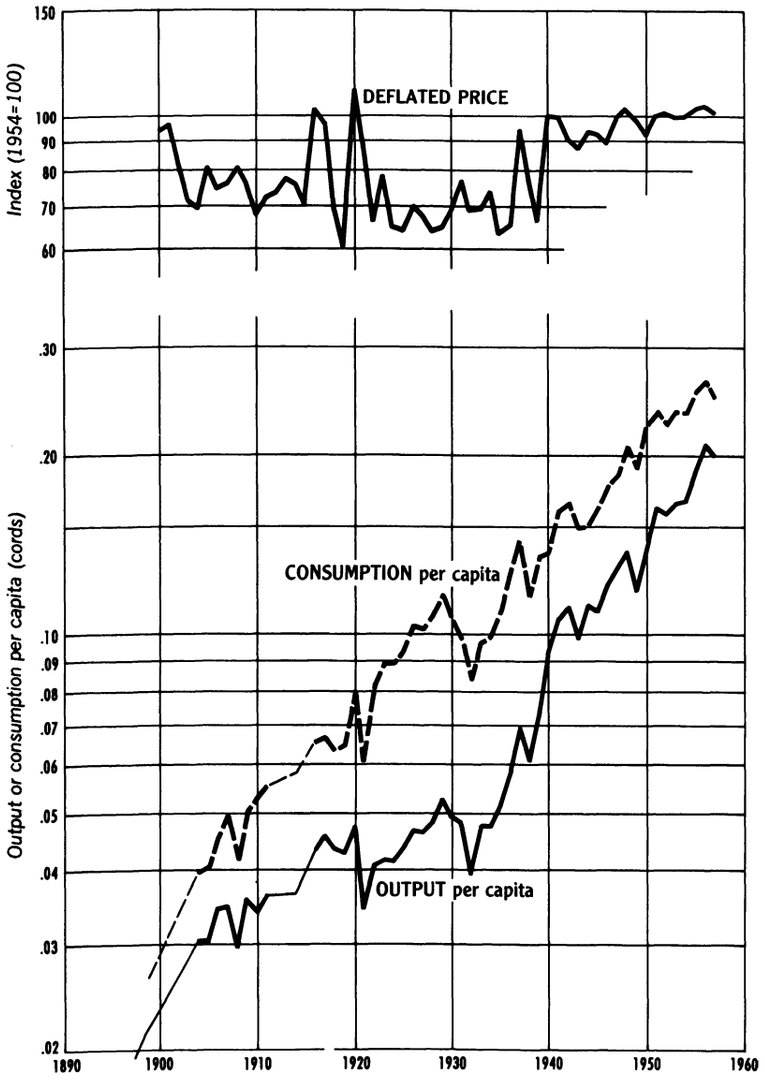


CHART 64. Pulpwood: relative indicators (sources: Tables FP-8/N-1; FO-10 and FC-8/N-2)

Petroleum

Fuels were valued at about three-fourths of the value of all minerals in the 1950's, and petroleum accounted for two-thirds of this valuation. One of the greatest obstacles to a satisfactory study of minerals is the peculiar complexity of the price and employment data. (See Tables MP-4, ML-6, and ML-7 and notes thereto.)

Nevertheless, our studies indicate that price fell very sharply from the 1870's to its low point in the 1880's and rose only about 50% from there to the 1950's, with most of the increase taking place between 1910 and 1920. The usual price indicator, a simple average for all the barrels of crude oil produced in a year, shows about half as much increase from the 1880's to the 1950's. The employment/output ratio (for oil and gas together) appears to have fallen more than in manufacturing, but the data here are poor and there are great inherent difficulties in relating employment to output.

The output and consumption pictures are clearer, for there has been not only an enormous increase in both but a clear-cut shift from large net exports to substantial net imports, as indicated by the shifting relation between the output and consumption lines. The interpretation to be placed on the net imports is, however, obscured by the monopolistic and government controls in production and marketing. An element of surprise is provided by the slow-down in the growth of consumption (and output) which shows up at about 1923, when the automobile was at the beginning of its period of greatest growth. This phenomenon is due in part to the perspective of our scale, which shows rate of growth. The rate of increase in motor vehicle registrations was much slower after 1923 than before, though increased numbers (and miles driven) added greater volume after that year. The slow-down also was caused to some degree by the slower rate of growth in the output of kerosene and lubricating oil after World War I than before.

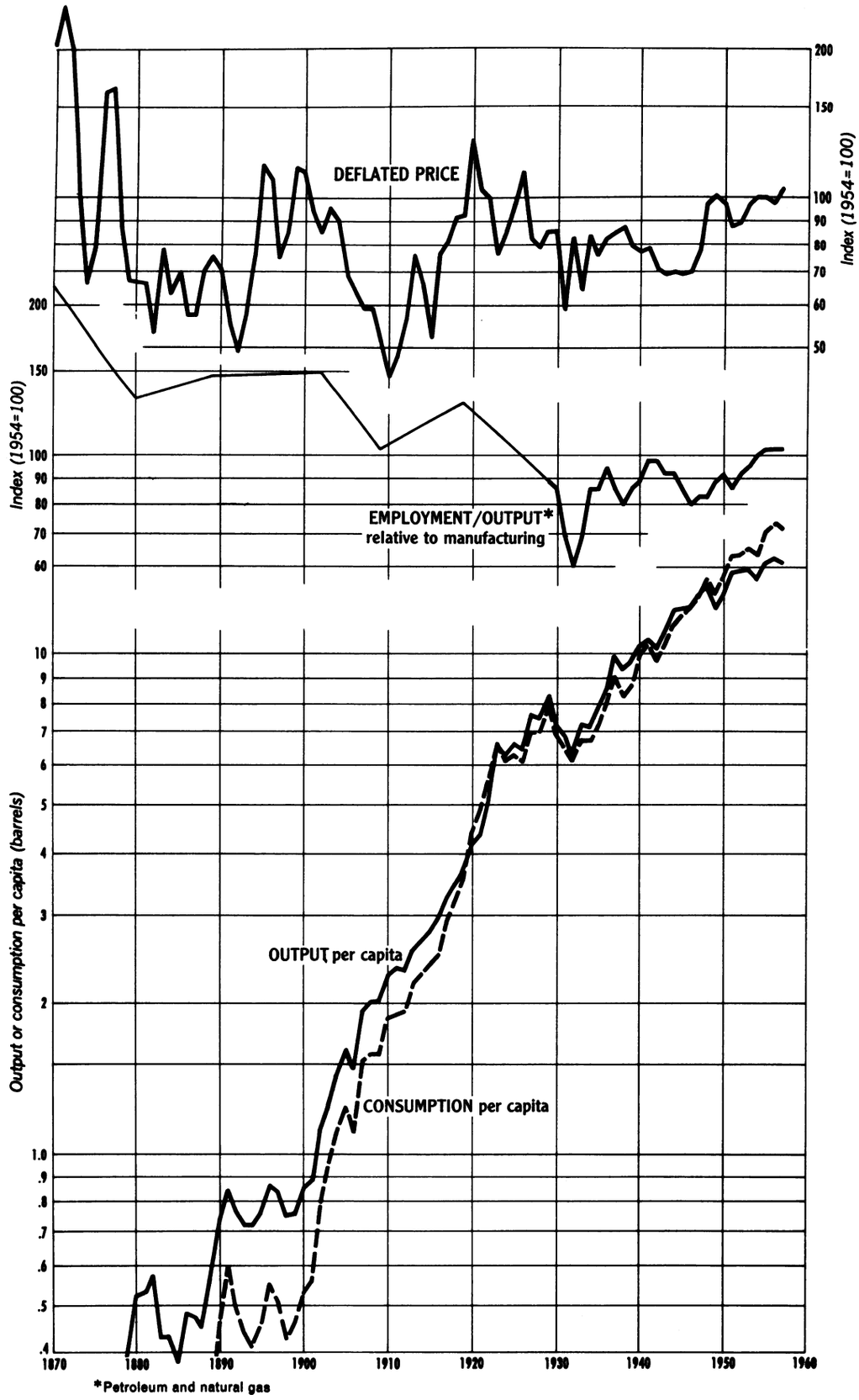
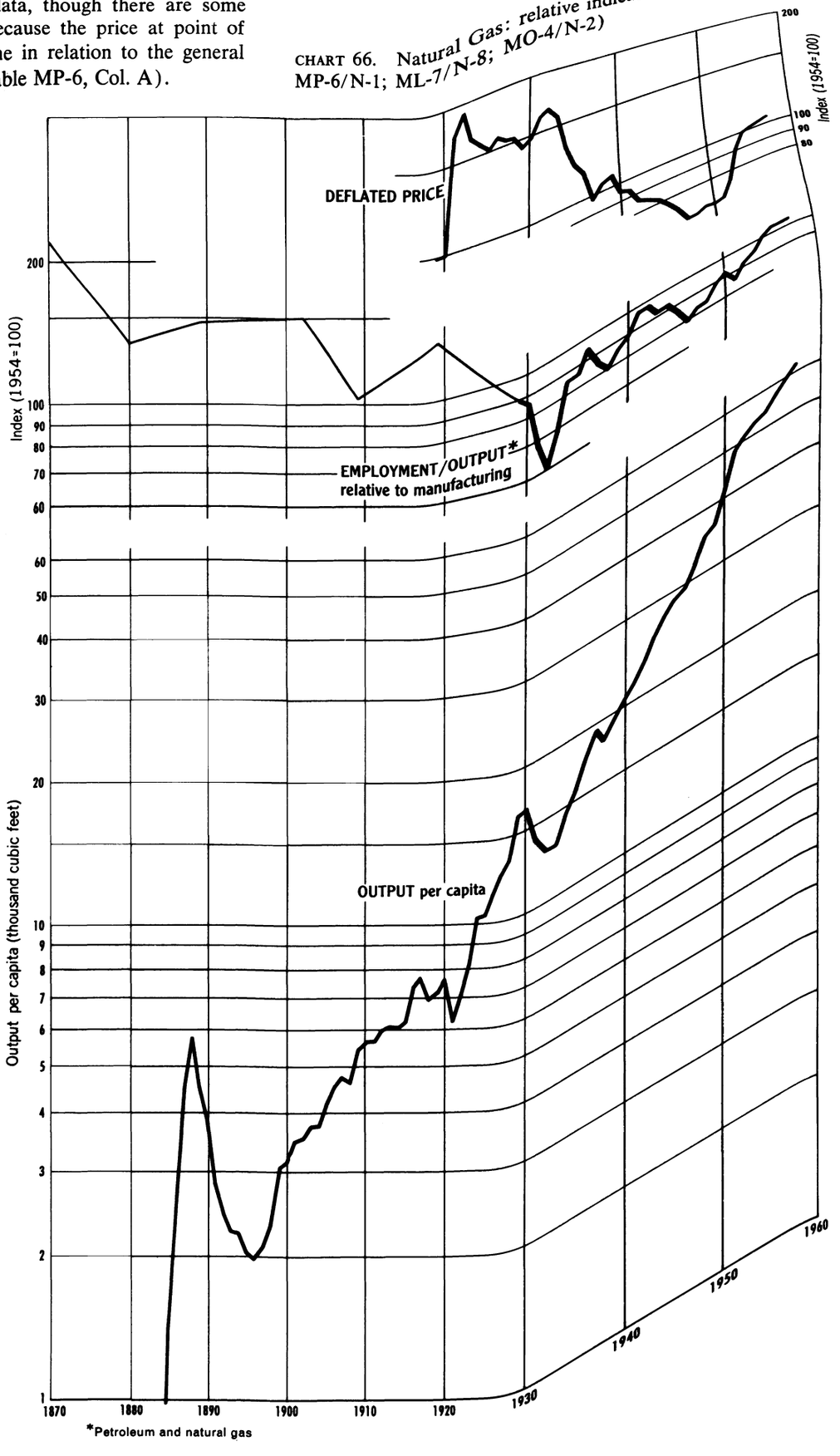


CHART 65. Petroleum: relative indicators (sources: Tables MP-4/N-1; ML-7/N-8; MO-4 and MC-8/N-2)

Natural Gas

Here is an apparent example of increasing plenty, with the rate of output (which was the same as the rate of consumption, as changes in stocks and foreign trade were almost negligible through 1957) rising about 6% per year, or nearly 100% per decade. Price shows a decline for the 35 years of usable data, though there are some problems of interpretation because the price at point of consumption shows no decline in relation to the general wholesale price index (see Table MP-6, Col. A).

CHART 66. Natural Gas: relative indicators (sources: Tables MP-6/N-1; ML-7/N-8; MO-4/N-2)



Bituminous Coal

The coal picture is in many ways the opposite of the oil and gas pictures. Price shows a persistent upward trend after World War I, and output a declining trend. The employment/output ratio shows a tendency to rise in relation to that in manufacturing, whereas with oil and gas it tended to fall. Despite these difficulties, exports showed a tendency to rise, as shown by the relationship between the output and consumption lines.

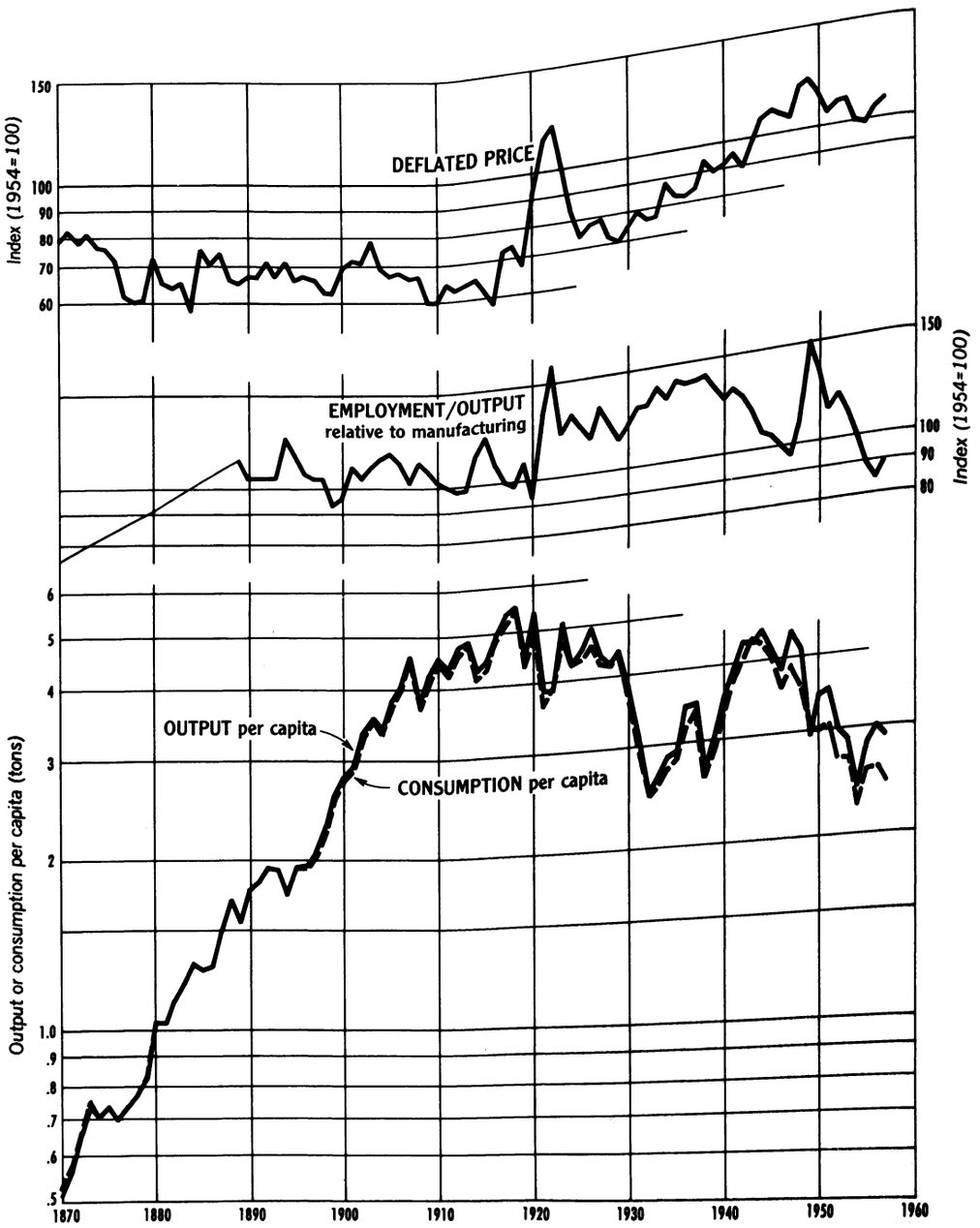


CHART 67. Bituminous Coal: relative indicators (sources: Tables MP-8/N-1; ML-9/N-8; MO-5 and MC-10/N-2)

Anthracite

The picture here is similar to that in bituminous coal, but the difficulties are still more acute: The rise in price is greater (because of price stability in 1921 when the general level of prices fell); the rise in the relative employment/output ratio is greater; and the fall in output and consumption is much greater. Exports, however, increased. The greatest factor in declining consumption was the increasing competition of oil and gas for home fuels: Their greater convenience and cheapness almost eliminated anthracite, which remained a relatively high-cost fuel.

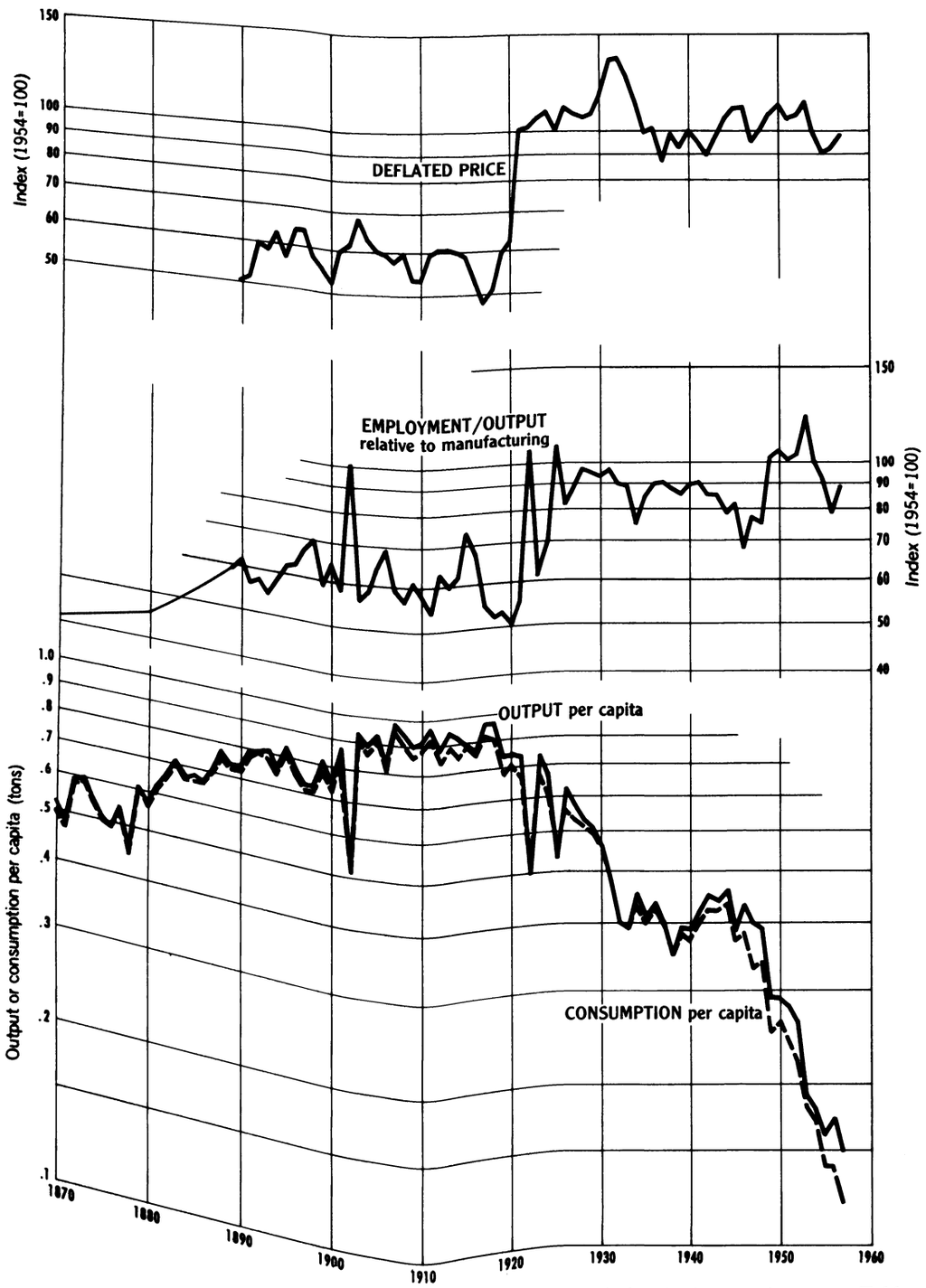


CHART 68. Anthracite: relative indicators (sources: Tables MP-9/N-1; ML-11/N-8; MO-6 and MC-11/N-2)

Iron

The situation in iron shows remarkably little change after 1910. Price had a slight tendency to rise, and labor cost to decline, at least until World War II. Output and consumption remained almost constant per capita, despite the drastic short-term fluctuations in the Great Depression and World War II. Net imports of ore of about 15-20% of consumption appeared in the mid-fifties, as shown by the rise of consumption above output. The net imports of iron in all forms are, however, probably less, in relation to consumption, than they were in the 1870's, when smelting capacity was not adequately developed and imports of pig iron and semi-manufactures were nearly half of consumption. (U.S. Department of Commerce: *Statistical Abstract of the United States,* 1878, p. 74; and Table MO-9 of this book.)

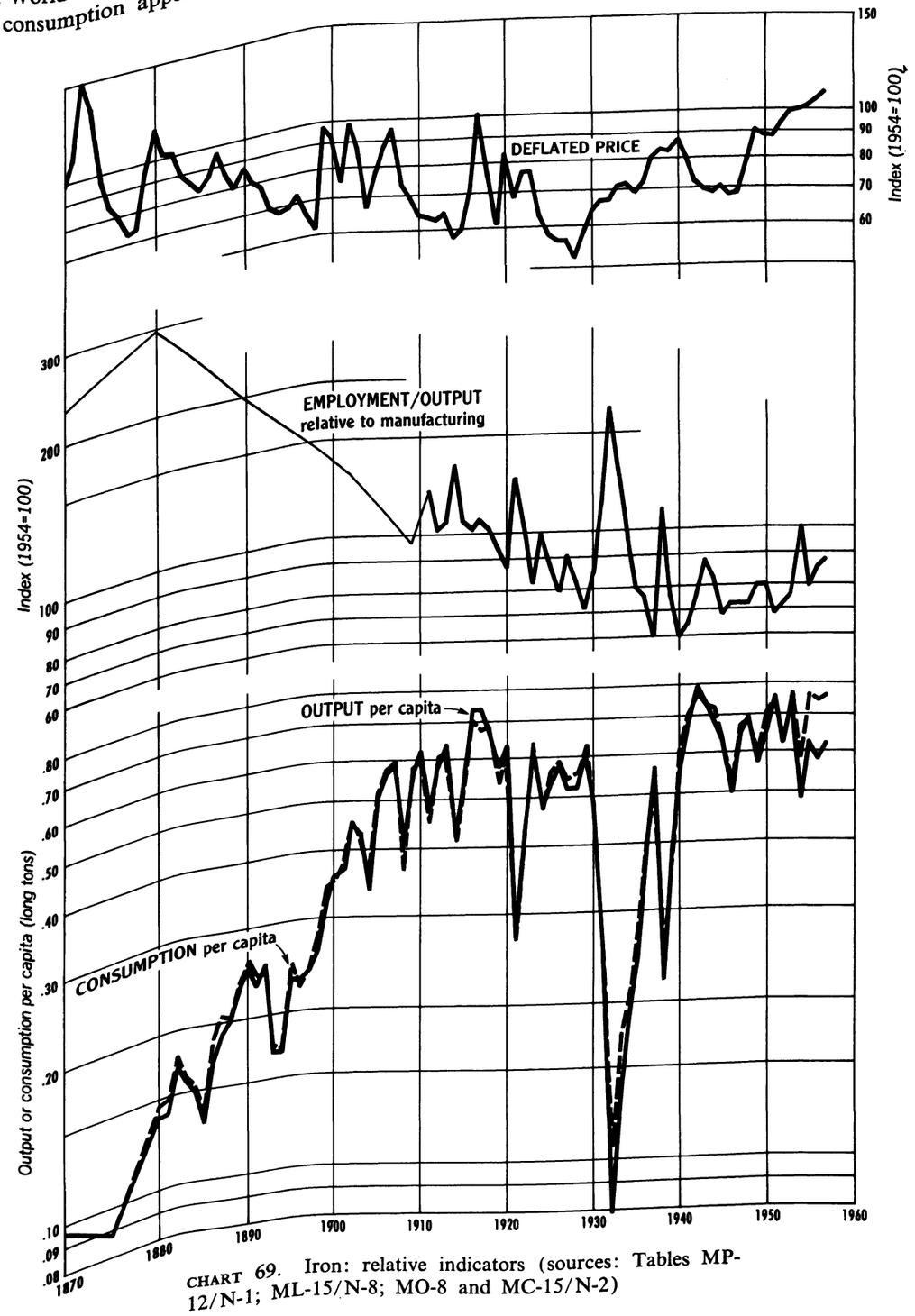
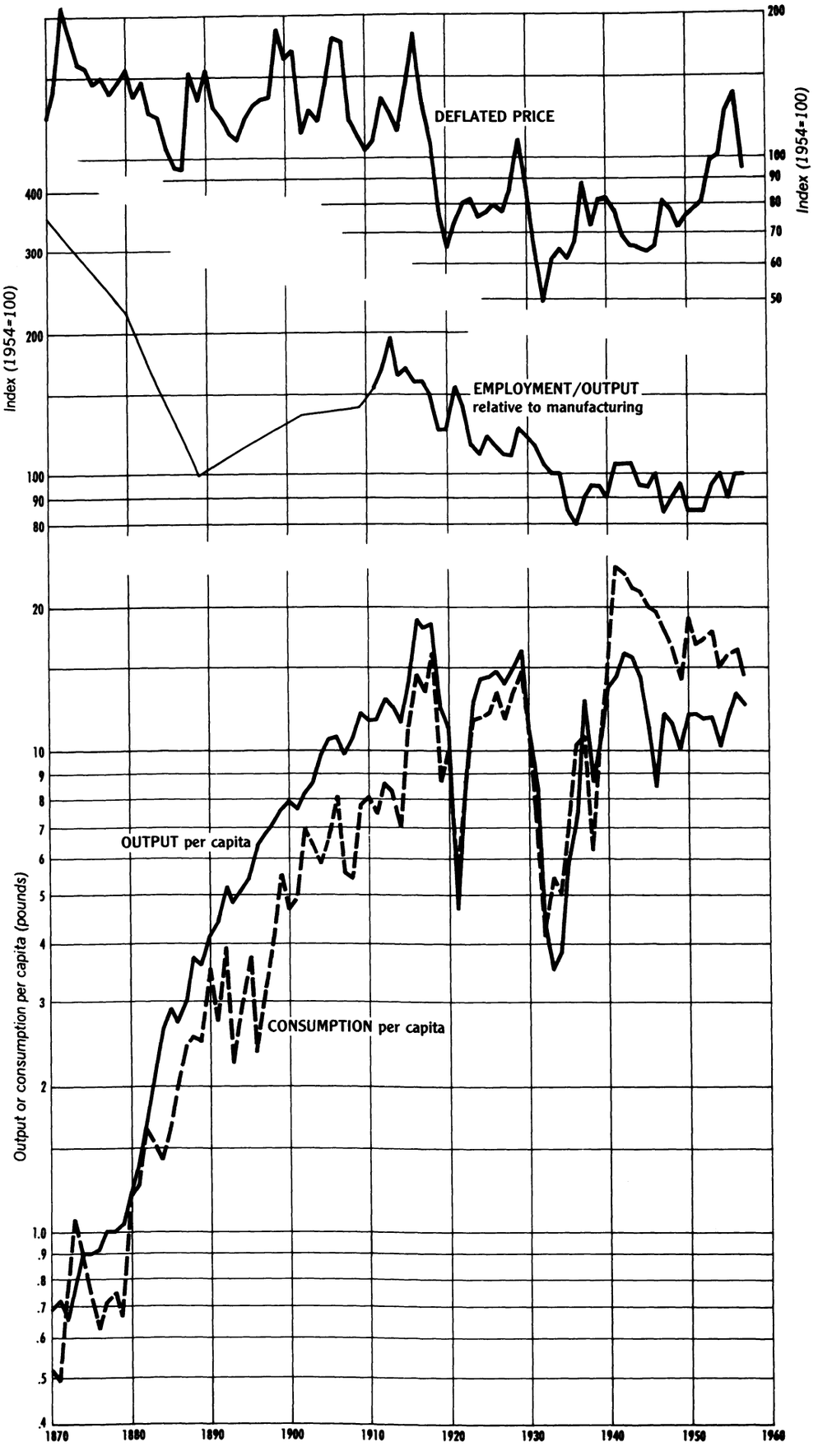


CHART 69. Iron: relative indicators (sources: Tables MP-12/N-1; ML-15/N-8; MO-8 and MC-15/N-2)

Copper

Relative price and employment/output show declining trends until the later 1930's, but output ceased to grow after World War I, and net imports became heavy after World War II.

CHART 70. Copper: relative indicators (sources: Tables MP-19/N-1; ML-19/N-8; MO-13 and MC-22/N-2)



Lead

A slight tendency of price to fall gave way to an uptrend by the mid-thirties; employment/output (for lead and zinc, since they are often mined together) appears to rise in relation to manufacturing since the earliest data, in 1902. Consumption per capita grew comparatively little, and then declined, after the 1920's; but output declined considerably more, so that net imports covered over 60% of consumption by the 1950's.

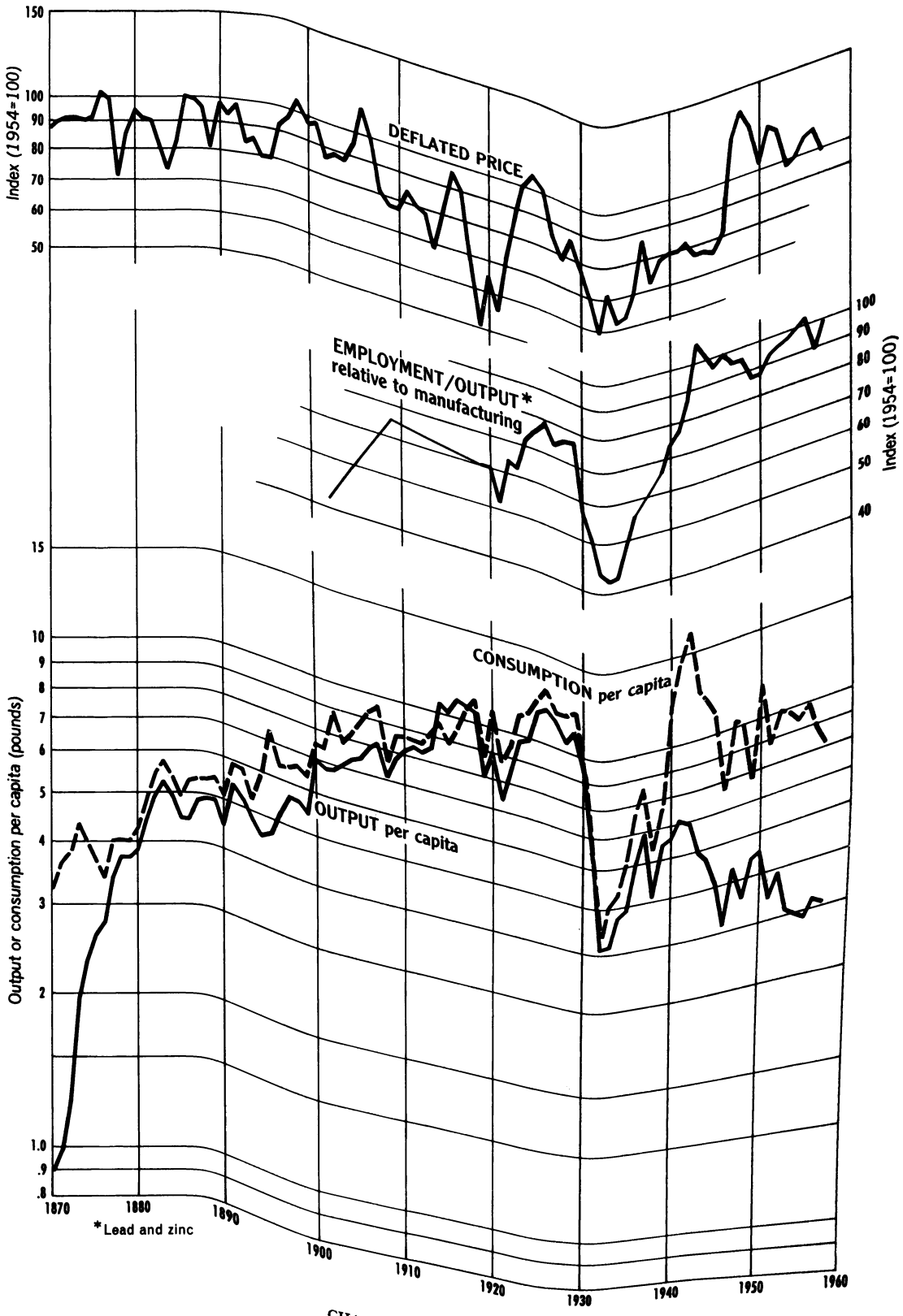
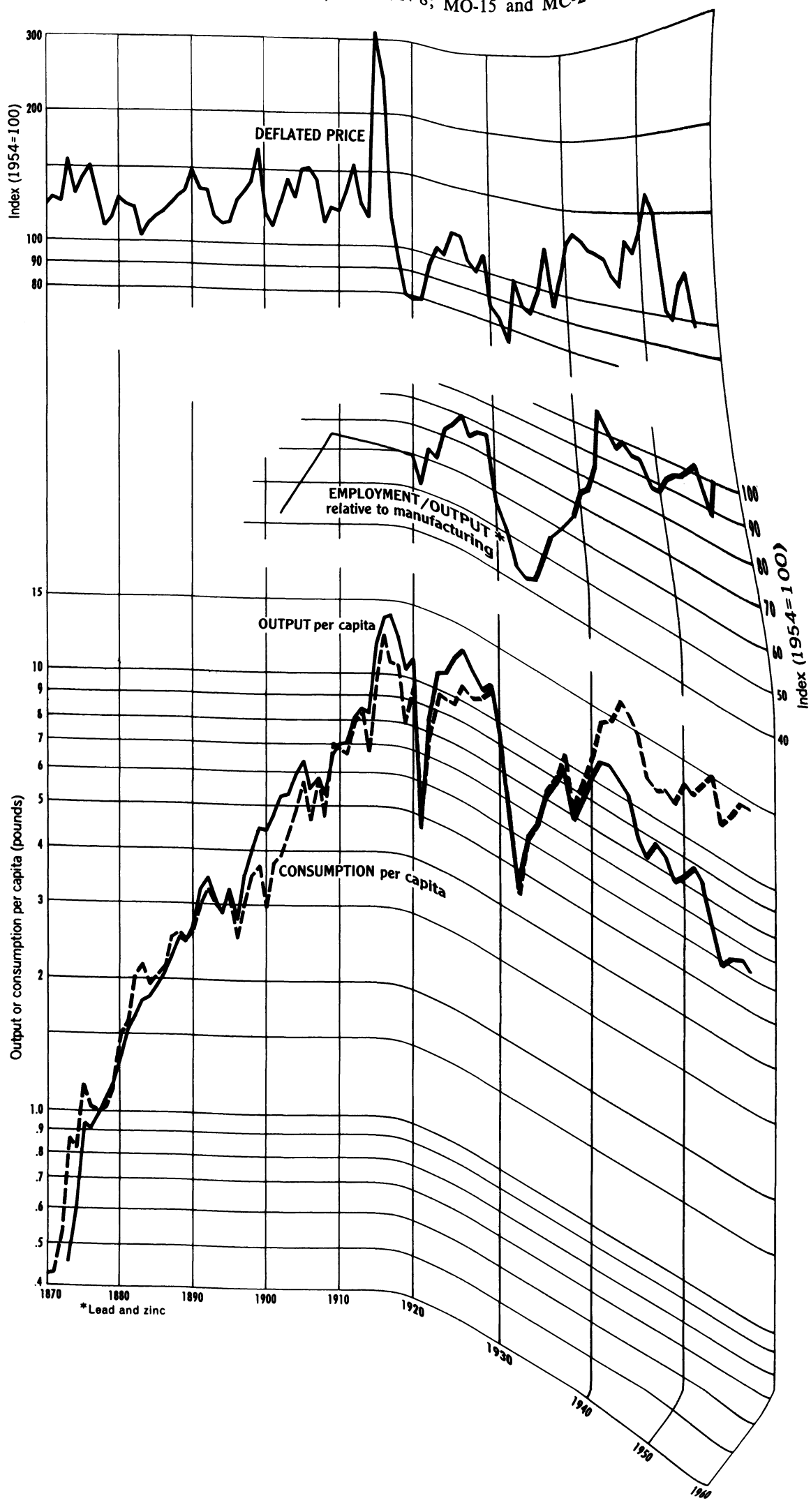


CHART 71. Lead: relative indicators (sources: Tables MP-20/N-1; ML-21/N-8; MO-14 and MC-24/N-2)

Zinc

The picture here is similar to that in lead, except that price shows no uptrend but levels off after World War I. Output shows less of a decline after the 1920's, but consumption shows growth where lead has a per capita decline, so that imports of zinc ran about 50% of consumption in the 1950's.

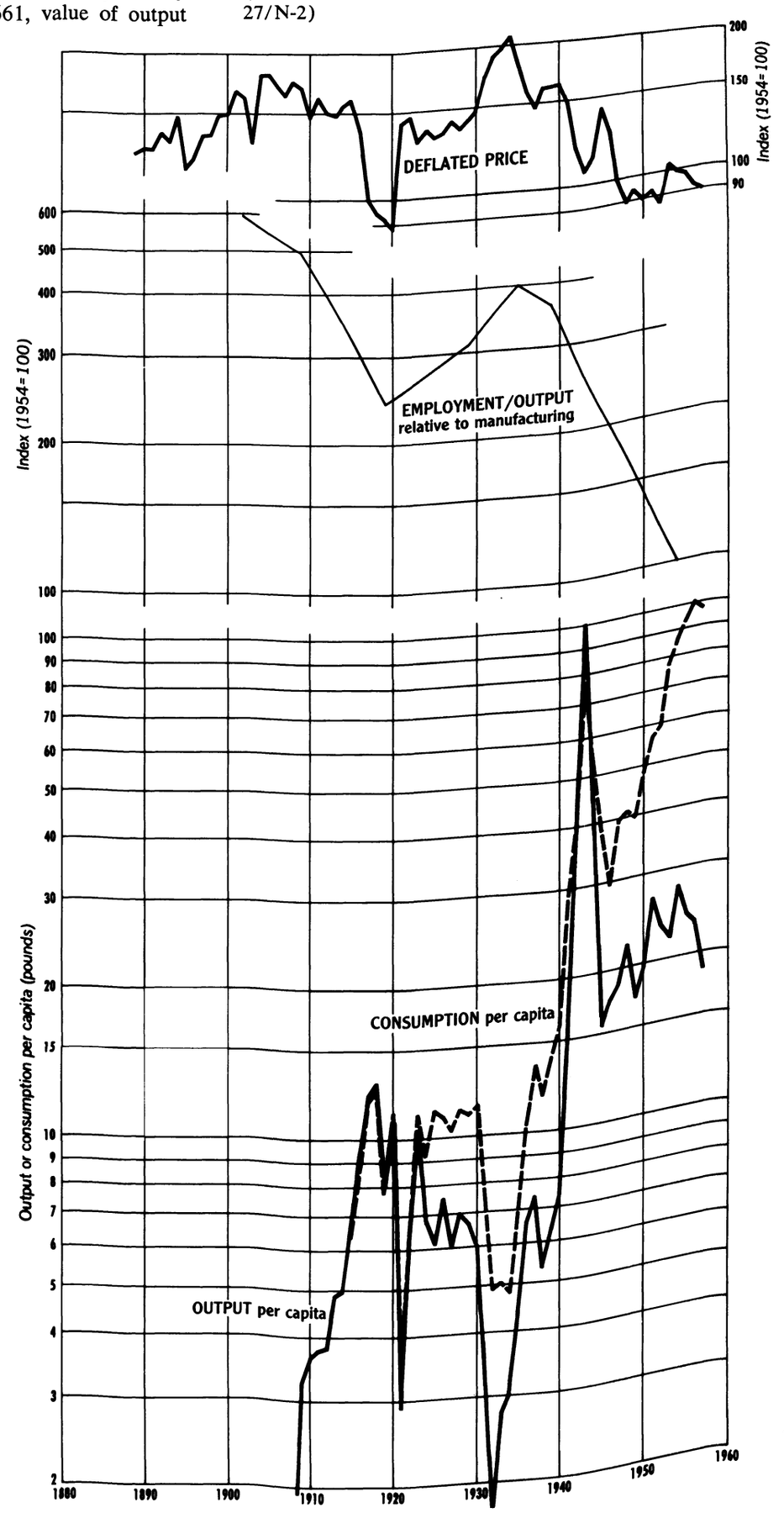
CHART 72. Zinc: relative indicators (sources: Tables MP-21/N-1; ML-21/N-8; MO-15 and MC-26/N-2)



Bauxite (Aluminum)

The case of aluminum is a classic one of rapid growth in use of a new material. Relative price shows a fairly continuous downtrend since the beginning of data availability. Consumption shows a steep uptrend, though it is quite irregular and the principal increase came during and after World War II. It should be remembered in interpreting these data that the bauxite industry is very small: In 1954, employment was 661, value of output was $16 million. This fact, together with the domination of the industry by a single company which sold most of the ore to itself, makes the price (see Table MP-22) and employment/output data of doubtful significance.

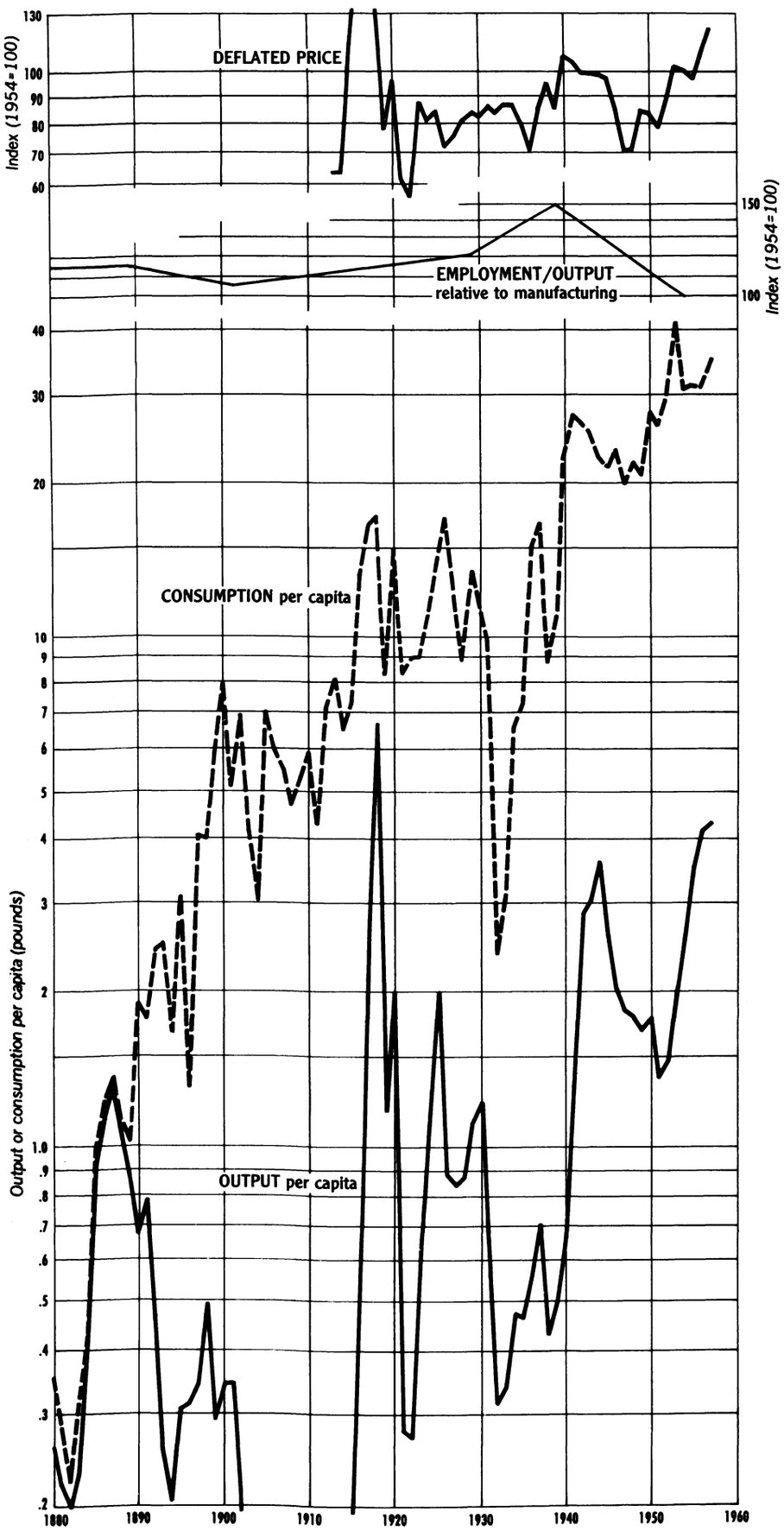
CHART 73. Bauxite (Aluminum): relative indicators (sources: Tables MP-23/N-1; ML-22/N-8; MO-16 and MC-27/N-2)



Manganese

Though manganese is the most important steel alloying material, the U. S. industry is quite small (1954 employment, 2270). Output fluctuated violently in response to wartime shortages and government subsidy programs, while consumption grew fairly constantly with the growth in steel output. Imports fluctuated violently, as shown by the difference between the two lines. The upward tendency of relative price seems to indicate increasing scarcity, though there are large deposits of low-grade ore which can be mined when price or lack of imports makes them economically worthwhile.

CHART 74. Manganese: relative indicators (sources: Tables MP-16/N-1; ML-16/N-8; MO-11 and MC-17/N-2)



Molybdenum

This is the United States' one surplus in the steel alloys field. The movement of price indicates an increasingly favorable situation.

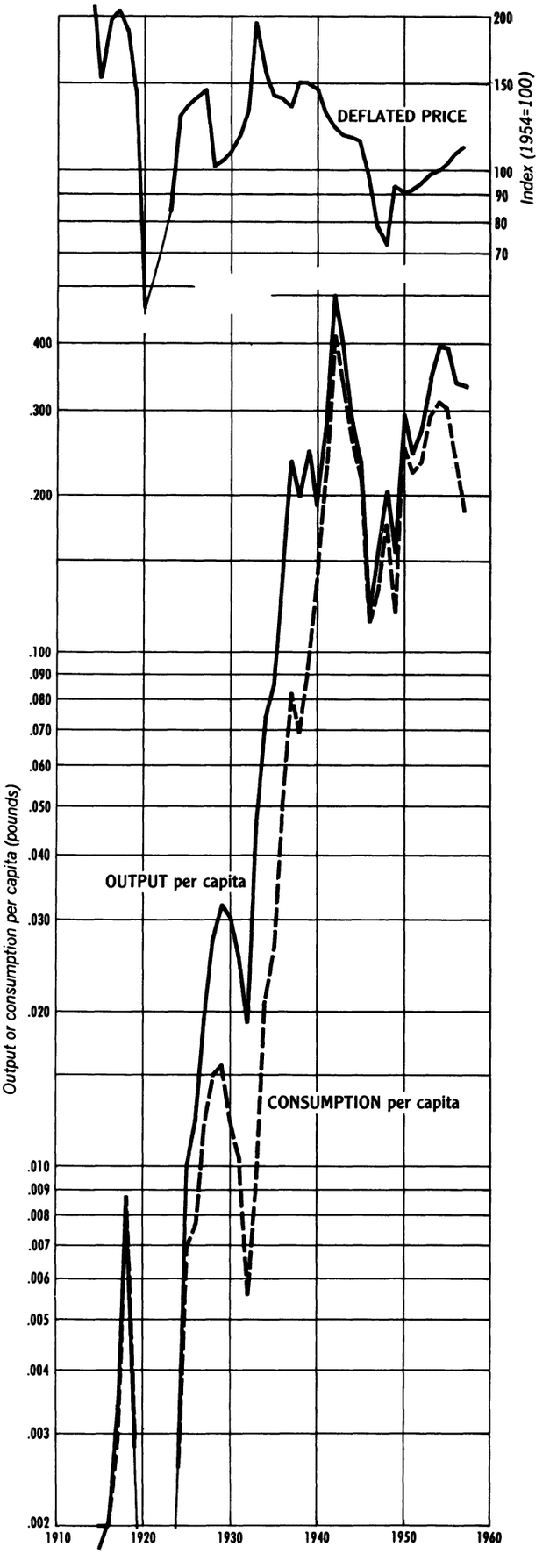


CHART 75. Molybdenum: relative indicators (sources: Tables MP-14/N-1; MO-12 and MC-19/N-2)

Gold

Gold price is of course set by government monetary authorities. Relative price therefore represents the inverse of the general wholesale price level, except in the case of the change in January 1934 from $20.67 an ounce to $35.00. The employment/output data cover gold and silver together, and there is further difficulty in that sizable quantities of both gold and silver are produced as by-products of the refining of other metals and that other metals are produced as by-products of these two. The consumption figures here include only industrial consumption, and not monetary; the apparent export and import figures therefore do not include movements to or from U. S. monetary stocks, which were much larger than the industrial movements after 1929.

It is interesting to note that, despite the greatly reduced output of gold, the employment/output ratio declined in relation to that in manufacturing. This decline was due in large part to the decline in relative price, which forced less profitable mines to close. The large rise in employment/output in the 1930's was due to the opening of relatively unproductive operations in response to high prices and unemployment; the sharp decline during World War II was due to shutdown of most operations by government order, as a labor-saving device. The rise in employment/output between 1869 and 1889 raises doubts about the validity of the early data.

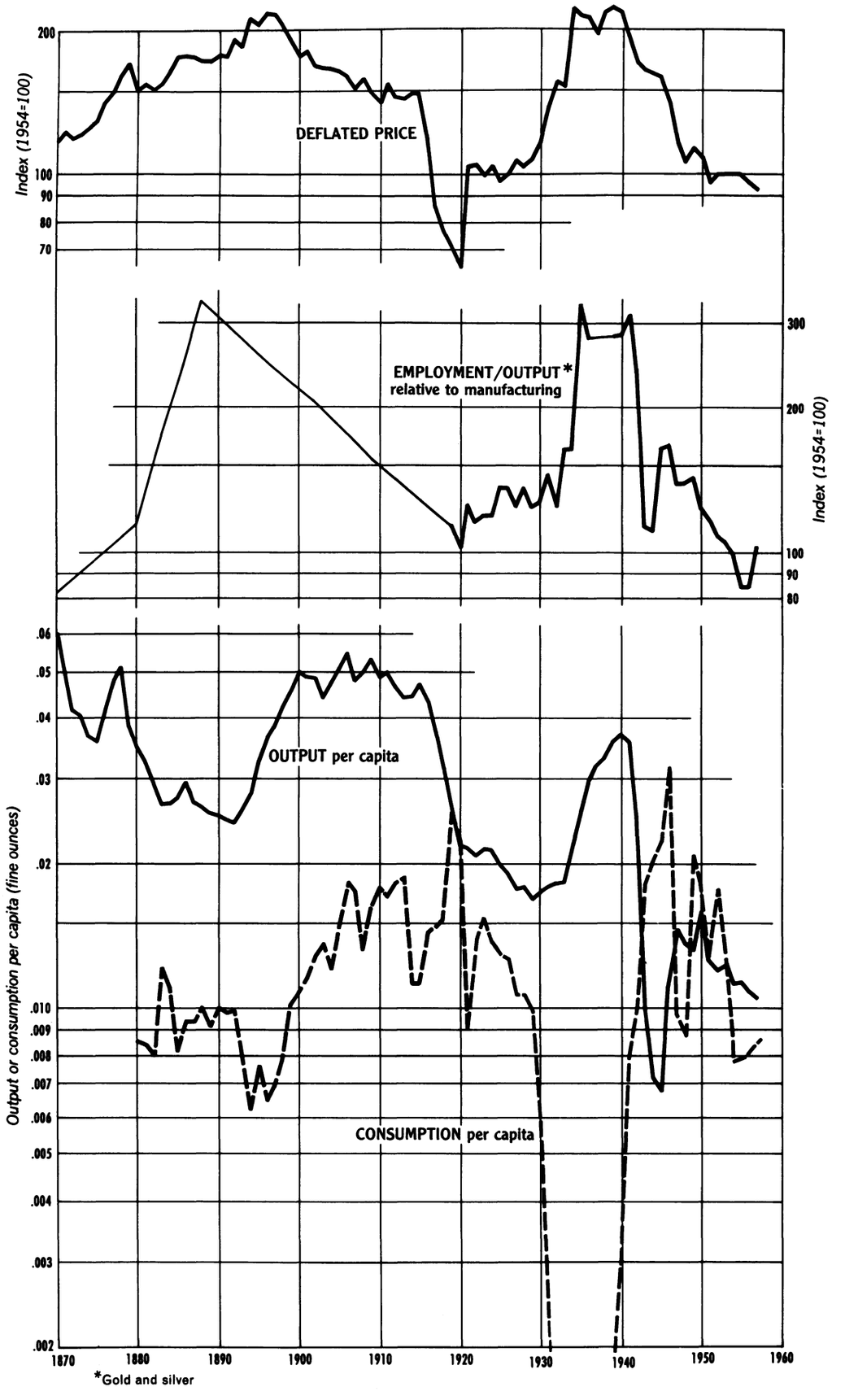
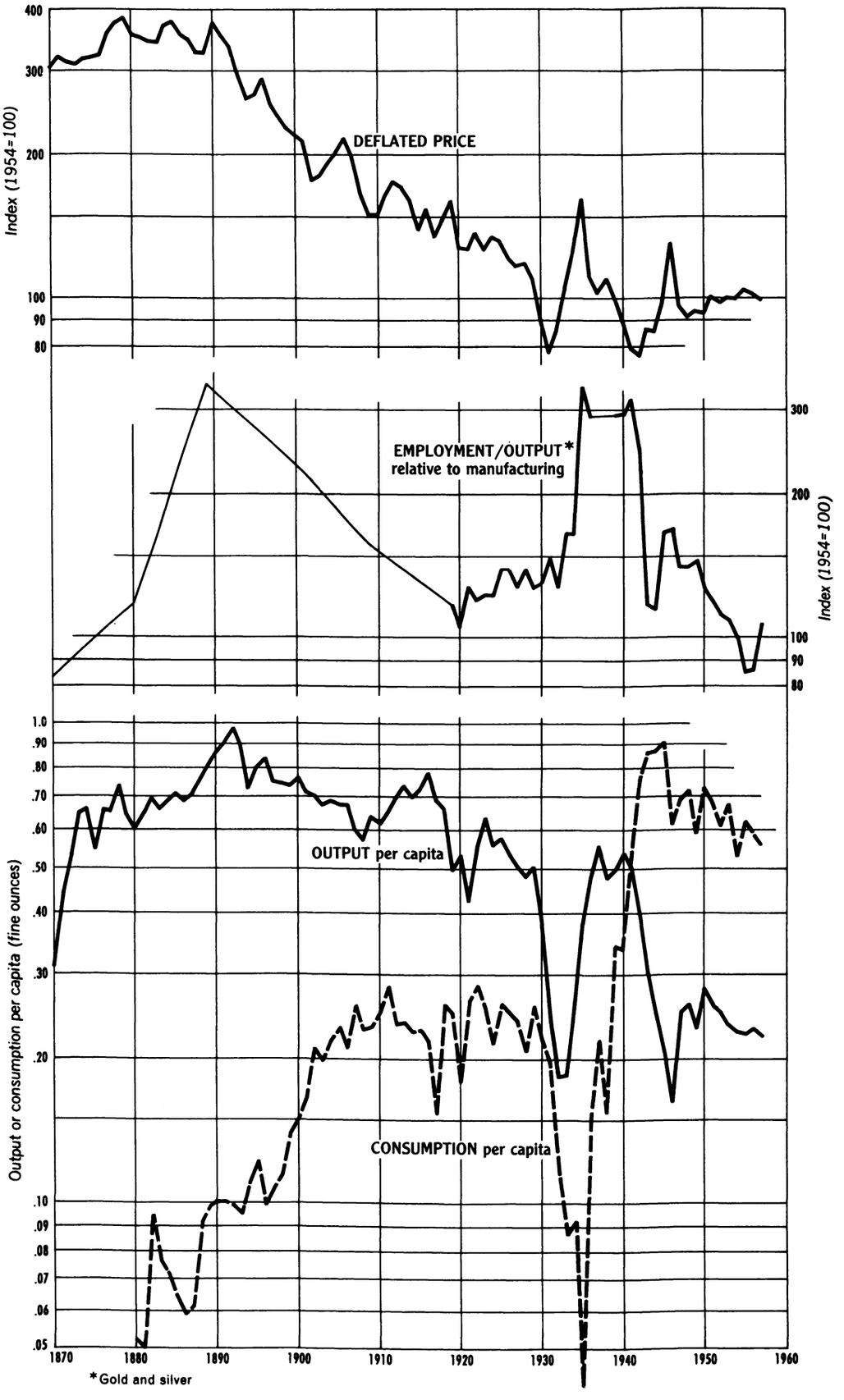


CHART 76. Gold: relative indicators (sources: fixed prices of $20.67 and $35/oz. divided by Table N-1; Tables ML-25/N-8; MO-19 and MC-13/N-2)

Silver

The price data for silver are more significant than those for gold, as silver is less completely dominated by monetary actions of the government. The employment/output data are less relevant, as most silver is now produced as a byproduct of the refining of other metals. It is clear, however, that the country has gone from a large net export position to one of large net imports. Industrial applications grew enormously during this period, principally to photographic and electrical uses.

CHART 77. Silver: relative indicators (sources: *Historical Statistics 1960,* series M-248/Table N-1; Tables ML-25/N-8; MO-19 and MC-13/N-2)

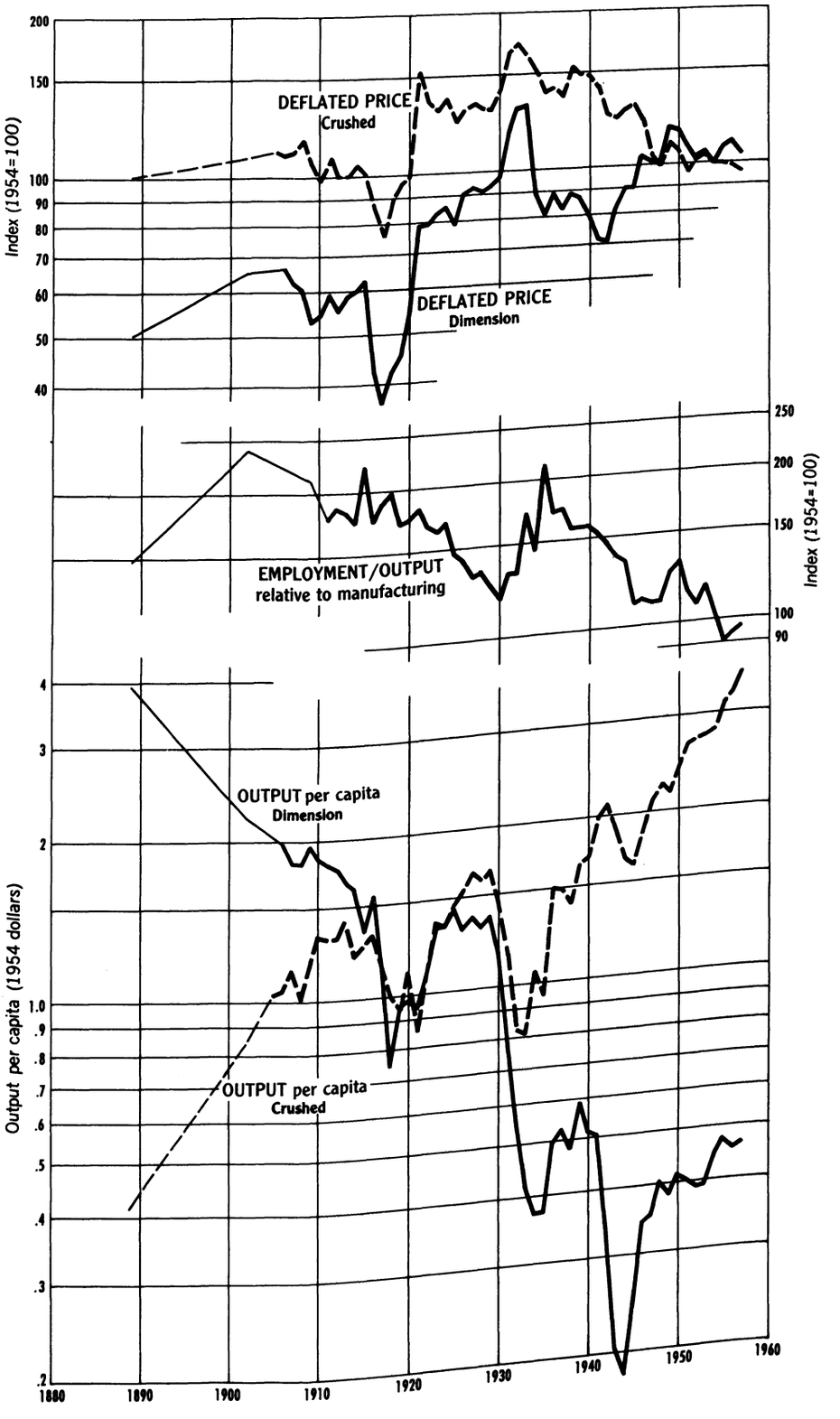


Stone

Chart 78 summarizes a large body of information, presented in 37 pages of tables and notes (Tables MP-27 and -28, MO-21, -22, and -23, and ML-28 and -29). That extensive treatment is an attempt to deal with the problems of (1) lack of comparability of the data over time and (2) the wide variations in quality of stone represented by the data for any one year—particularly the difference between dimension (cut or shaped) stone and crushed or broken stone. The indexes presented in this chart are weighted composites, with separate weights for dimension and for crushed varieties of 6 different kinds of stone (12 different weights in all). Considerable heterogeneity remains even after this "correction," however, and the degree of fabrication of dimension stone no doubt varies over time.

Nevertheless, it seems safe to say that the relative price of stone (whose total value was over a third that of all nonmetals in 1957, and perhaps two-thirds in 1870) rose over the period of our study, or at least until the 1930's, when crushed stone began to drop in price. Data on employment are not available for dimension and crushed rock separately for the period prior to 1922. Output of dimension stone declined, particularly in the period 1889-1932. Output of crushed and broken stone rose more rapidly than population during most of the period, but most steeply in the 1950's.

CHART 78. Stone: relative indicators (sources: Tables MP-27 and MP-28/N-1; ML-29/N-8; MO-21/N-2)



Clays

Clays make up a broad group of commodities with a number of uses, from being made into chinaware to serving as paper coating, rubber "filler," oil-well "mud," and filters. Consequently the price, employment/output ratio, and output data all present difficulties. However, our indexes are computed as weighted averages of five reasonably homogeneous series. A tendency to decline is apparent in the relative price series and in the employment/output ratio. Output (and consumption, since foreign trade is minor) grew considerably more than population—about twice as fast as the average of all nonmetals.

The output-consumption series has been adjusted to exclude clays not shipped as clay but used in the establishment where mined, for the production of brick, tile, cement, etc.

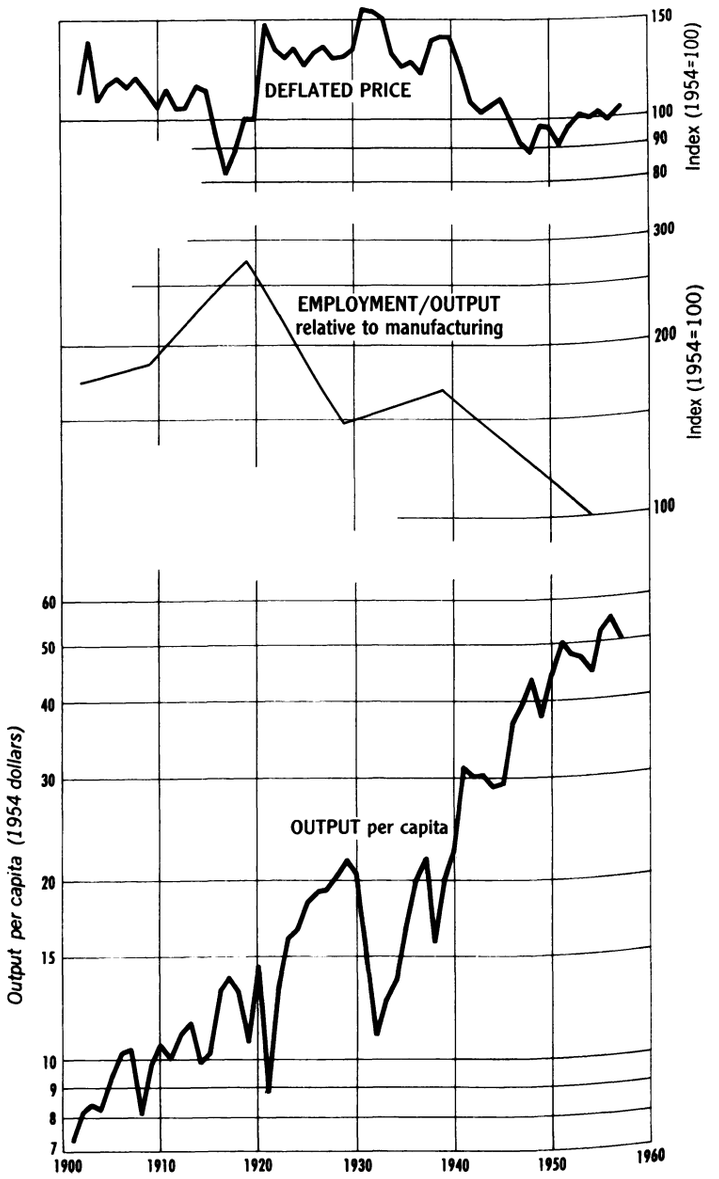
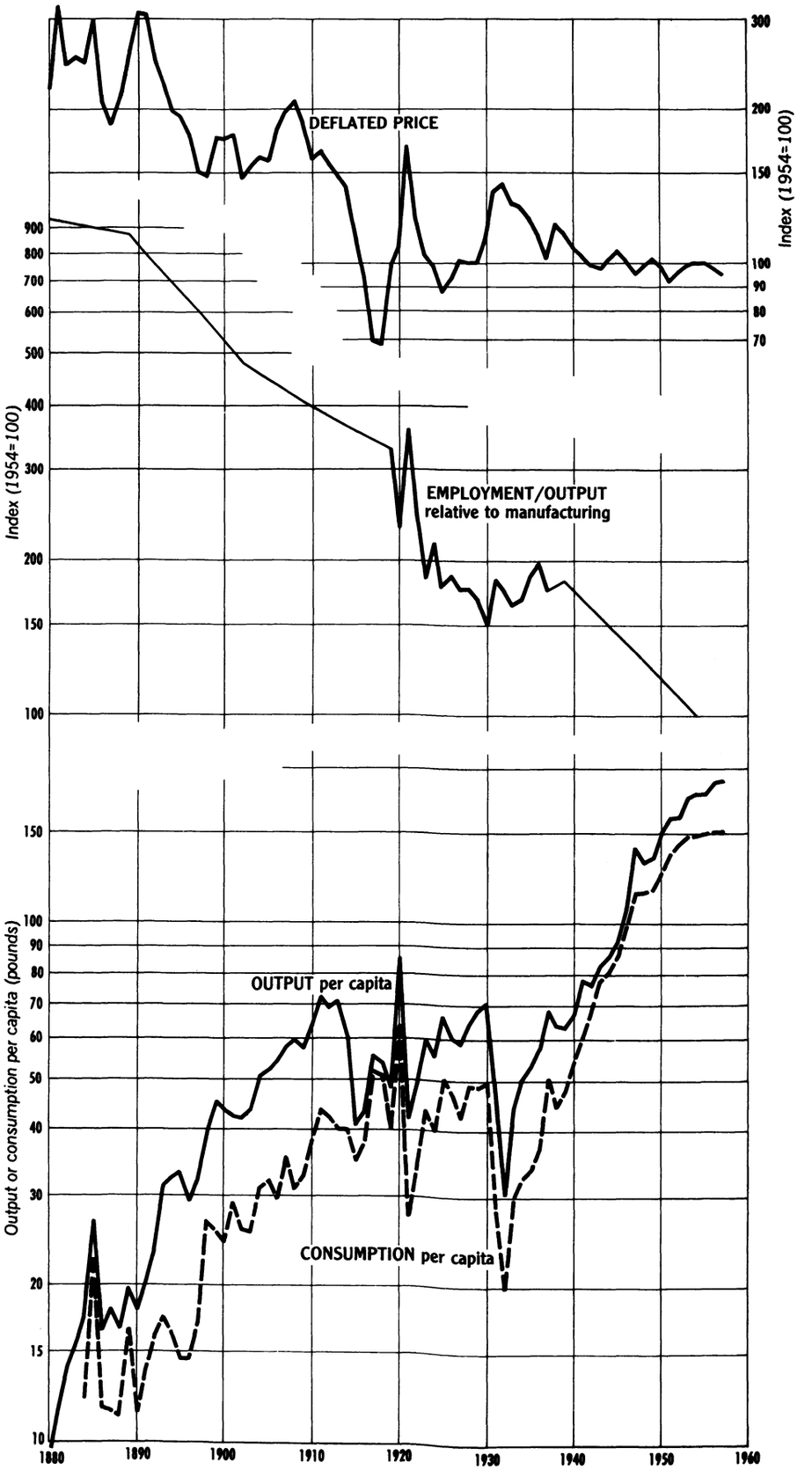


CHART 79. Clays: relative indicators (sources: Tables MP-33/N-1; ML-32/N-8; MO-27/N-2)

Phosphate Rock

The phosphate rock industry is one of the clearest examples of a separable, identifiable industry with good long-term data, steadily advancing technology, and abundant reserves. Falling price and employment/output ratio, rising output and consumption, and persistent exports (output line above consumption line) characterize the data.

CHART 80. Phosphate Rock: relative indicators (sources: Tables MP-38/N-1; ML-33/N-8; MO-29 and MC-35/N-2)



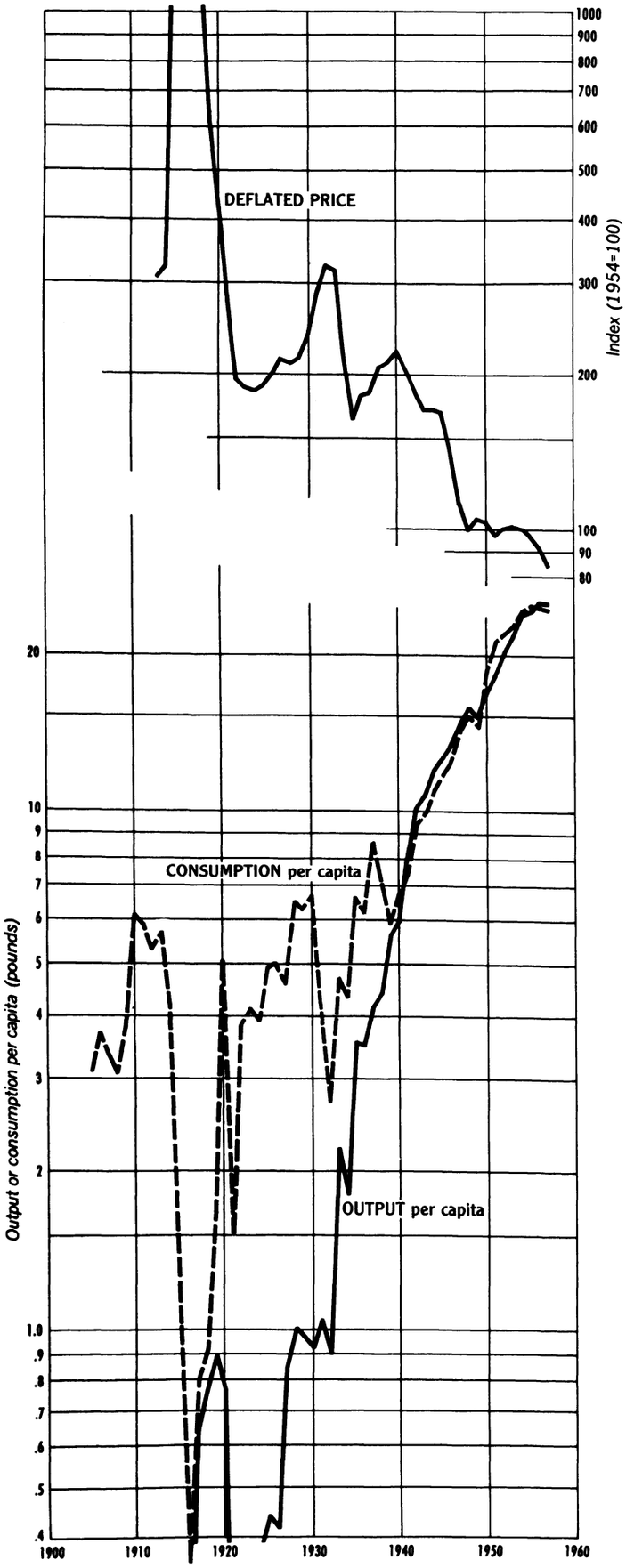


CHART 81. Potash: relative indicators (sources: Tables MP-39/N-1; MO-30 and MC-36/N-2)

Potash

The potash industry is one in which the U. S. position has been revolutionized since World War I, when the loss of German imports caused the price to rise several thousand percent. The U.S. industry had its beginnings in 1915, but the major expansion came after 1930, when good deposits were discovered in New Mexico.

Sulfur

The sulfur situation is blurred by the number of substitutes and alternative sources. Pyrites (FeS_2, $CuFeS_2$, etc.) were the principal domestic source before the introduction of the Frasch process in 1904, and they contributed about 20% of the sulfur used in the 1950's. By-product output from the refining of oil, gas, and various metals also blurs the picture of supply and cost; and so do various reclamation processes at oil refining and other industrial plants.

In view of the great complications and the revolutionary changes in technology of production and use, the nearly continuous downtrend in price and uptrends in output and consumption are remarkable. The shift from net imports to net exports which took place at the time of World War I (as shown by the crossing of the output and consumption lines) is a clear result of the Frasch-process economies.

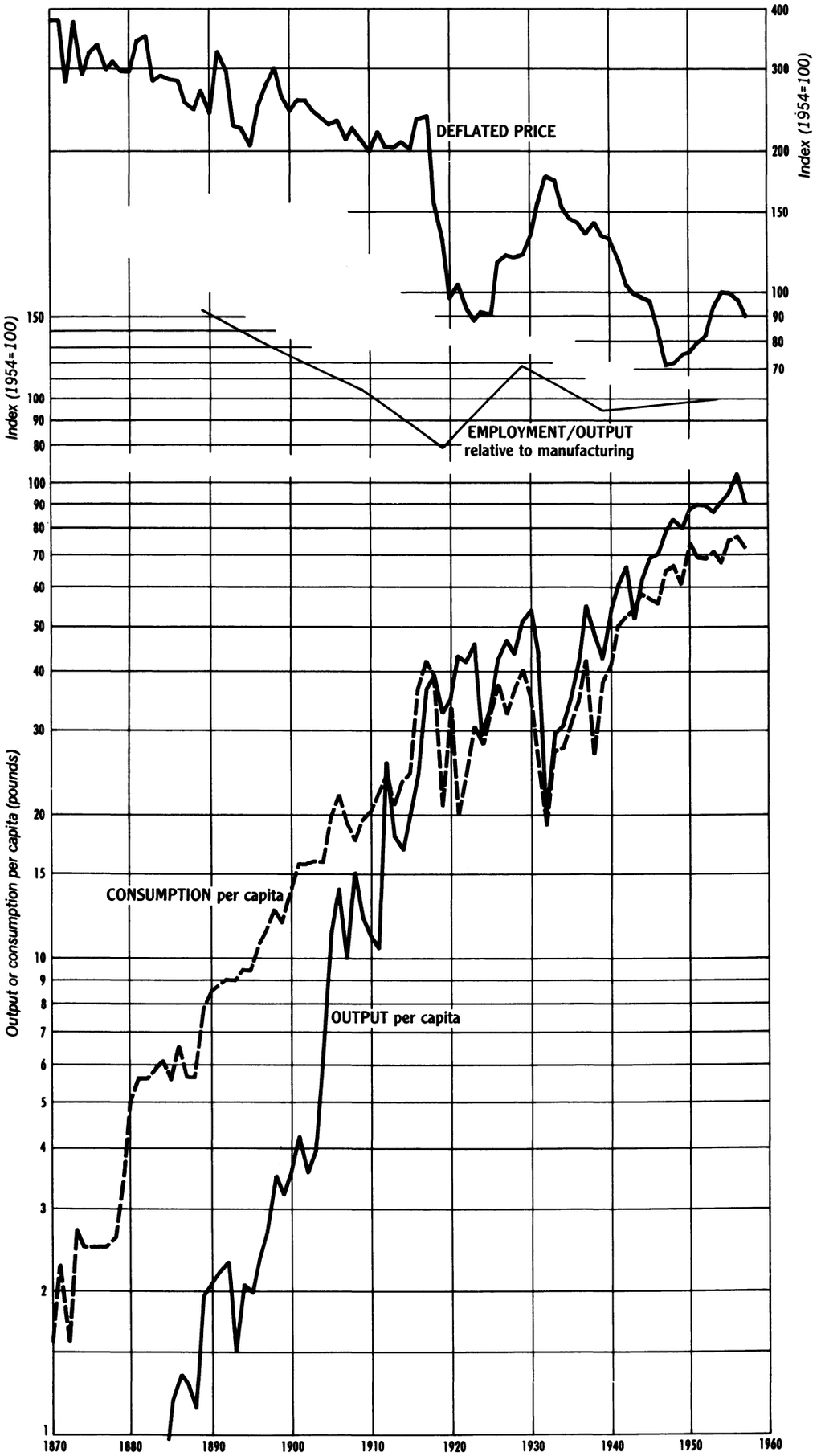
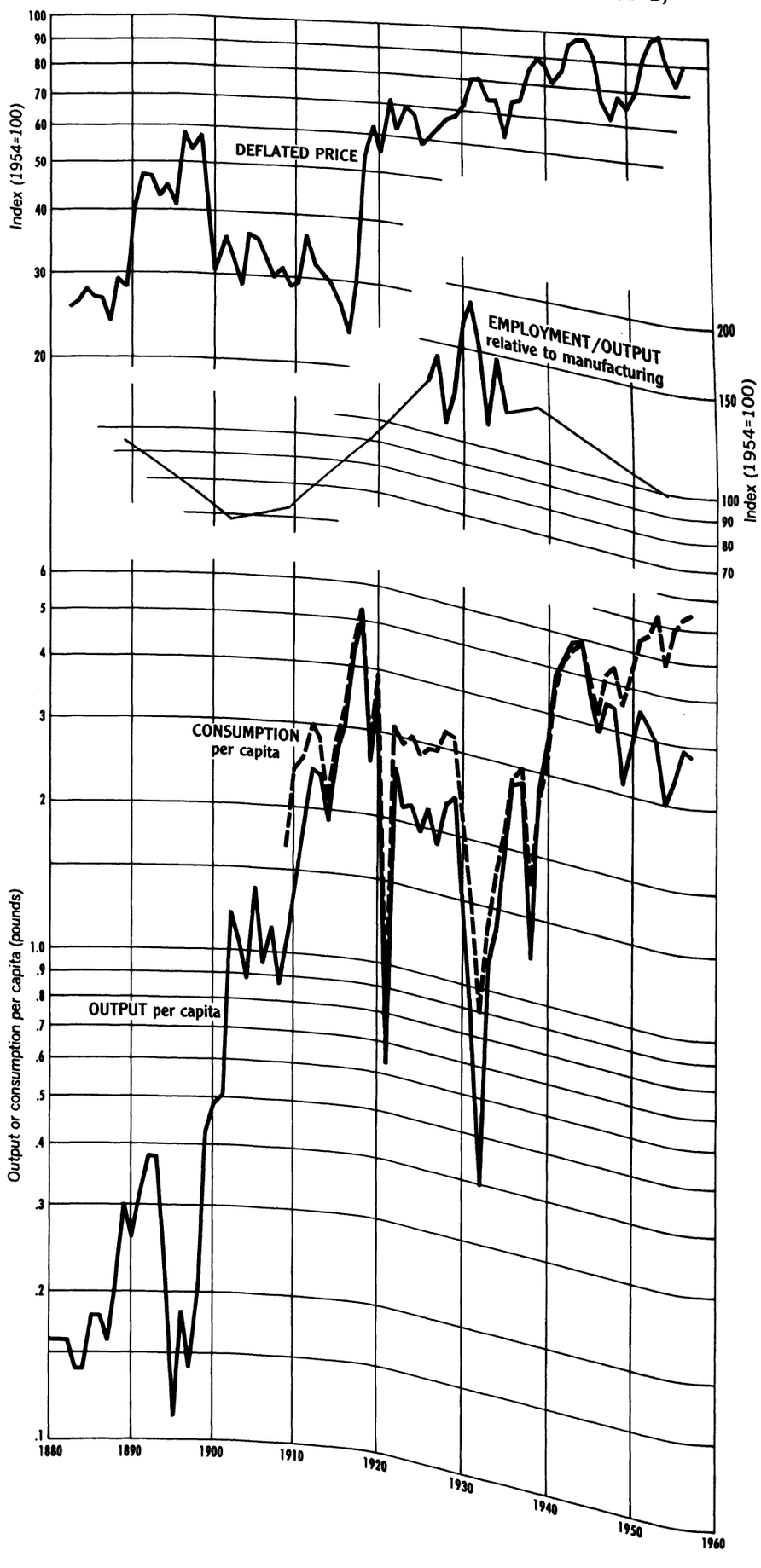


CHART 82. Sulfur: relative indicators (sources: Tables MP-40/N-1; ML-34/N-8; MO-31 and MC-37/N-2)

Fluorspar

Rising relative price and rising or constant relative employment/output ratio, plus irregular but increasing imports, indicate an industry of some scarcity, though high-grade reserves were estimated at 25 times output in 1957, and the possibility of an almost unlimited supply as a byproduct from phosphate rock processing was still to be exploited. (Cf. U.S. Department of the Interior: *Mineral Facts and Problems,* 1960 ed.)

CHART 83. Fluorspar: relative indicators (sources: Tables MP-41/N-1; ML-36/N-8; MO-32 and MC-38/N-2)



STATISTICAL TABLES

Notes on Data and Procedure

In the table of contents which follows these notes each vertical column represents a type of measure (price, output, imports, etc.) and each line a commodity or group of commodities. At each intersection of a column and a line, a page number is given, indicating where this measure of this commodity is to be found. Where no page number appears, no measure is provided, either because no data were available or because in a work of these dimensions this particular measure was not felt important enough to include. The grouping of tables is by major industries, then by type of measure, and finally by groups of commodities.

At the back of the book are a number of series commonly used as standards for comparison—population, Gross National Product in constant prices, total manufacturing output, the Bureau of Labor Statistics' general wholesale price index, employment/output ratio (productivity of labor) in manufacturing and for the total national product, and total national and total manufacturing employment. With the aid of these tables, the movement of the series for resource commodities can be compared with, or "deflated" by, any of the comparison series. Thus any price series may be analyzed for relative rise or decline by dividing it by the general wholesale price index series; any consumption series checked for per capita growth or decline by comparing it with the population series; any labor cost series checked for relative rise or fall by comparing its movement with that for manufacturing or GNP. A number of the more interesting comparisons are made in the text charts, above.

A number of alternative series are provided in many of the tables, a few series extending for the entire period 1870-1957 but most for only part of it. The series are presented in parallel columns so that the user may judge for himself the probable degrees of accuracy and consistency within and between the different series. The final column in each of these tables is our choice, or construction, of a single long-term series for the measure in question.[1]

[1] As an example, see the table on the price of beef cattle (Table AP-29). Column A of this table represents beef cattle farm price as presented by Strauss and Bean for the years 1870 through 1937. Column B is the series given by the Agricultural Marketing Service of the U.S. Department of Agriculture and is a weighted average price series, for the years 1910-57. Column C is derived by dividing the AMS price by the Strauss and Bean price. Charting it shows that the former series is about 4% greater than the latter during most of the period of overlap (1910-37). We do not know the reasons for the difference but suspect that it might be due to different methods of computation. In any case, there is clearly no difference in trend. We feel fully justified in obtaining a long-term consistent series by raising the Strauss and Bean data by 4% for the period prior to 1910 and showing the complete series in the final column.

Reasons for Differences in Series

Statistics are rarely precise to a point where error is less than one percent. This is true not only of public opinion polls but of censuses of population, industries, and other such relatively simple and tangible categories. Some reasons are:

(1) The questions asked, the definitions used, and the respondents questioned all affect the figures obtained. Two agencies which obtain the "same" information on the "same" area of interest are almost certain to have some differences on some of these points.

(2) The respondents questioned may give somewhat different answers at different times even to identical questions, owing to changes which occur, even in a short time, in the information at their disposal or in their judgments on the facts, or owing to errors.

(3) Errors may occur in the tabulation of data.

Complete coverage and perfect understanding between questioner and respondent are generally impossible to obtain. To complicate matters further, the user of statistics frequently has less understanding of the subjects dealt with than had the questioner and respondent.

These factors play a particularly large role in a study such as this one, which involves a broad and complex area of study and utilizes data from the more distant past, when statistical sophistication was low and many words had other meanings than they have today. Francis Walker, the director of the 1870 census, complained that his statistics on mining and fishing were "distressingly inadequate to the known facts of the case." At the nearer

end of our period of study we have much more solid ground, yet we get differences like those presented in Table A.

TABLE A. Crushed and Broken Stone: 1954 Output
(in thousands of tons)

	Census of Mineral Industries		Minerals Yearbook	
	As given in Table 14D-1	As given for comparison with Min. Yearbook	As given in 1954 Census for comparison	As given in 1954 Minerals Yearbook
Total	363,407	369,104	370,003	405,795
Limestone	299,924	302,563	301,693	323,800
Granite	21,958	22,780	21,039	22,815
Slate	928	947	609	609
Marble	469	544	454	454
Trap rock	23,544	23,574	24,210	30,756
Sandstone	9,573	9,805	9,962	11,717
Stone, n.e.c.	7,011	8,891	12,036	16,252

The four columns of this table all represent the "same thing," the output of crushed and broken stone in the United States in the year 1954. The first column is the Census report, as given in its principal table on the subject; the second column is from a special table given by the Census report (at page 14D-3), adjusted by special tabulation (from unpublished materials, in part) to be as nearly comparable as possible with the Bureau of Mines tabulation on the same subject; the third column is from the same special Census table and shows a special retabulation of Bureau of Mines figures to make them as comparable as possible with the adjusted Census figures in column 2; the fourth column consists of the Bureau of Mines' figures as given in its *Minerals Yearbook* for 1954, in the tables for all stone together and for each kind of stone separately. (The principal reasons for the sizable differences between the last two columns is the inclusion in the last column of figures for production in the Territories and possessions.)

These considerations and this example will, we trust, offer sufficient reason for our general policy of rounding off all series to three or two significant figures. Figures beyond the third place are little more than random numbers, since the data gathering process cannot offer this degree of accuracy.

Aggregates: Weighting

Summaries of our data are given in the "all extractive" indexes of price, output, etc. and in the subaggregate measures for agriculture, minerals, timber, and fishing and their principal groupings. In most cases the individual series have been combined simply by the use of fixed weights. The output index, for example, has been constructed by multiplication of the output of each commodity by its price in 1954 and then by adding together all the resultant constant-dollar series. Indexes have also been computed on the basis of weights for 1929 and for 1902. This method of computation can be represented by the formula:

$$\Sigma q_1 p_o$$

in which "q_1" represents the quantity in the given year and "p_o" represents the price in the base year (1954, or 1929, or 1902). The usual division by the value of the "base period" output would be $\frac{\Sigma q_1 p_o}{\Sigma q_o p_o}$ which is basically the Laspeyres formula.

Most of the basic data are available in the form of the numerator ($\Sigma q_1 p_o$, or $\Sigma p_1 q_o$, etc.). This permits the user easily to construct his own aggregates. Thus, the reader can compute a price index for the nonferrous metals from the series provided in Table MP-10 by adding the figures for each year for each of the nonferrous metals. He further has a choice of 1954, 1929, or 1902[2] weights, or he can derive a chained index using all three base-period weights.

The presentation of the data in this fashion also permits the user to determine quickly, for indexes with 1954 weights, the commodities or groups of commodities that are important in affecting the movement of each index.

Since our primary interest is to provide economic measures of resource industries, we have chosen weights that approximate the values of the resource commodities at the earliest extractive level. We have sought to get the value of metals at the ore-concentrate stage, before refining; the value of logs delivered at the mill, before manufacture into lumber or paper; etc.

It should be carefully noted that one result of this weighting is that the price weight for each commodity used in our output, consumption, and import tables is not the same as the price given in the preferred series for the corresponding commodity. Thus the 1954 price weight for copper is \$491.60 per ton, or 24.6¢ per pound, while the preferred price series gives 29.7¢. The figure 24.6 is just the total value of the concentrates (including some gold and silver, etc.) produced by the copper industry in 1954, as reported by the Bureau of the Census, divided by the 1954 figure in the series on copper output (smelter output from domestic ores). Similarly, the output weights used in the computation of the price indexes are not the same as the outputs given in the tables on output for the corresponding commodities.

This weighting is an attempt to minimize the fabrication costs included in the relative weights of the different commodities and to avoid differences in weights owing to chance variations in the degree of fabrication at which price, output, etc. figures are collected.[3] However, there is no way of knowing how well this objective has been accomplished, since there is no criterion of just what a "raw" material is, or to what extent we have included "fabrication" costs in our measures for the "value of raw materials." Is agriculture overweighted because the commodities it produces are more "fabricated" than iron ore or crude oil? Or is agriculture underweighted because we have used value of output rather than employment as our

[2] Aggregates only are shown for 1929 and 1902 weights, though the weights are indicated in the notes to each table, so that the necessary multiplication can readily be performed. The years 1954, 1929, and 1902 were chosen because a reasonably good census was taken for each and because they represent current relative values, post-World War I values, and values existing as the frontier began to disappear at the turn of the century.

[3] For import commodities which enter chiefly in refined form, this involves considerable difficulties. Where practical, we have used estimates of values of crude materials.

weighting factor? Are sawlogs or finished lumber more comparable to threshed wheat and shipped milk? Is copper ore concentrate more "fabricated" than bauxite?[4] Does monopolistic pricing in one field overweight that field in relation to the others?

These philosophical (and practical) questions probably have no answer, but we note that for the 1954-weighted indexes the value-of-output weights we have used give nearly three times as great a relative weight to minerals as would employment weights (see Table B). The result

TABLE B. Percentage of Total Weight Assigned to Resource Sectors by Three Criteria, in Four Different Years

	Value-of-output weights	Value-added weights	Employment weights
	Percentage of total weight in 1954		
Agriculture	64	64	86
Timber and fish	7	6	4
Minerals	29	30	10
	Percentage of total weight in 1929		
Agriculture	69	71	89
Timber and fish	10	8	2
Minerals	21	21	9
	Percentage of total weight in 1902		
Agriculture	77	77	[1]91
Timber and fish	10	10	[1]3
Minerals	13	13	[1]6
	Percentage of total weight in 1870		
Agriculture	82	86	96
Timber and fish	13	9	2
Minerals	5	5	2

[1] Data for the year 1900 used.

is a greater rise in the "all extractive" output index (for example) than would appear in an employment-weighted index. The use of value-added weights, which make allowance for the price of the labor as well as its "quantity" and which also take into account the value of the capital and management (and monopoly, etc.) going into the output of each industry, would give a still larger relative weight to mining than does the value-of-output weighting.

In addition to the problem of alternative modes or criteria of weighting, there are problems of choosing which year or years to use as the basis for the distribution of weights and of deciding whether to use fixed weights or weights which vary continuously or occasionally.

In the principal tables, we include alternative indexes showing the differences resulting from the use of different value-of-output weights. Further alternatives can be computed by use of the data in the tables. However, the 1954 value-of-output weights will probably be used most often because they reflect most nearly the content of current resource problems. Thus the price indexes weighted by 1954 outputs reflect the changing cost of the set of resources or "market basket" recently produced by the industries under consideration; the 1954-weighted output index reflects the growth of output when each commodity is valued according to 1954 market forces; etc.

[4] See discussion below, on Consumption and Imports.

Finally, there are several important contenders among possible formulas to be used in the computation. For example, in addition to the Laspeyres formula, which we have used, there are the Paasche, Edgeworth, and Fisher's Ideal, among formulas given in most textbooks on statistics. We have not made computations with alternative formulas; most would give results intermediate among the three fixed-weight alternatives, computed by the Laspeyres formula, which are given in our tables.

The Data — Prices

The ideal price series for study of resource industry economics would be one which quoted a raw material of uniform quality, before transportation or processing, at a single location; there should also be a complete absence of monopolistic influences, from either sellers or buyers, at all times. The actual series available are unfortunately often influenced by such extraneous factors.

Where changes in quality do not beset the statistician, changes in location of the principal sources of a commodity, or of the market (or population) in relation to the commodity source, may have altered the significance of price as an indicator of scarcity. The radical decreases in transportation costs have tended to bring sources "nearer" to consumers and to bring in new (and often foreign) sources of materials as the most economical. (As a significant example, see Petroleum, Table MP-4.)

Dealing with these problems fully is not possible, particularly in a work of this scope. We have dealt with them by averaging and by linking price series for commodities of slightly different quality, location, etc., raising or lowering one series to match a later one, according to the ratio of the two quotations in some period of overlap. In general, we have shown alternative series where available, so that the reader may have choices and know the range of variation among the various sources. Ratio columns and graphs are provided, so that the reader can judge readily the degree of probable error introduced by the use of a link and the switch to a different series. However, many series, particularly in agriculture, are simply "average value" of all output sold by producers and cover a considerable range of quality and location.

The goal of pricing materials "raw" has generally been subordinated to that of uniformity of quality and location. Thus we have priced pig metals rather than ore concentrates or ore, grain threshed rather than standing in the field, and lumber at the mill rather than standing timber. The group indexes, however, have been computed with weights such as to yield values in the base years which approximate the value of the raw materials, as delivered from the farm, mine (or concentrator, where mines customarily concentrate their own ore), or logging camp.

Our principal indexes are computed with output weights rather than with consumption weights. This computation yields series which reflect the growing or declining difficulties of extracting materials from the earth rather than the growing or declining costs of materials consumed, including those imported.

The choice of base year for weighting makes a significant difference in the movement of the price indexes in

the case of the mineral fuels and nonmetals. By derivation, the all-minerals index shows similar differences. For the other indexes the differences are moderate, and unimportant for many purposes, as may be seen from Table C.

TABLE C. Price Indexes, 1953-57 (1870-74=100)

	Weights		
	1902	1929	1954
All extractive	290	254	200
Agriculture	259	260	256
Crops	201	202	199
Livestock	291	281	277
Forest	719	669	622
Minerals	235	165	122
Fuels	251	173	132
Metals	165	165	151
Nonmetals	[1] 380	[1] 220	[1] 170

[1] 1880-84=100.

All the series reflect the changing value of money; thus it is necessary to compare with the Bureau of Labor Statistics' general wholesale price index (Table N-1) or some other index of the changes in the general level of prices to determine the "real" or relative change in particular prices or indexes in any particular span of years.

The Data — Outputs

The weighting problem for the output indexes, while for many purposes not important, can be more critical than in the case of the price indexes, for the divergence in rates of increase was much more for outputs than for prices. A single cycle of a logarithmic scale (covering a range from 1 to 10) is sufficient to cover the range of price changes for the different commodities, while more than two (covering a range from 1 to 100) is required for outputs (see pp. 6-8).

In the calculation of the indexes, we have attempted to ameliorate the weighting problem by using three alternative base-year sets of prices as weights, though many additional sets of weights might be considered. Table D summarizes the differences in results obtained by using 1902, 1929, and 1954 values as weights.

TABLE D. Output Indexes, 1953-57 (1870-74=100)

	Weights		
	1902	1929	1954
All extractive	510	492	485
All agriculture	422	474	421
Crops	395	433	418
Livestock	408	444	384
Forest products	124	134	148
All minerals	2,980	2,680	2,730
Fuels	3,990	2,770	3,030
Metals	856	1,560	1,630
Nonmetals	4,600	3,660	2,700

For some resource commodities there are significant problems of "quality"—which is usually equivalent to "quantity" in an economic sense. For example, as new oil fields were brought in during the late nineteenth and early twentieth centuries they often produced crudes whose impurities and specific gravities were a considerable obstacle to the technology of the times; they were also generally at some distance from adequate transportation facilities, and at a greater distance from important markets than the older fields. For these reasons the new crude oils sometimes sold at prices 90% less than the older oils. Lumber is another commodity whose transportation costs were generally a dominant factor in evaluating timber stands as valuable or worthless; and there are very large physical differences, as to knots, cracks, hardness, grain, warp resistance, etc., which create a wide range of prices even at the same location. The same things are of course true of stone, fluorspar, iron ore, fish, milk, apples, and wheat, in greater or lesser degree. Yet we have been constrained by the data available and the complexity of the problem to treat all barrels as equal in our series on the output of petroleum, all board feet of lumber and bushels of apples as measuring a uniform commodity. In some cases we have corrected price series for biases which problems of this sort introduce; in the output series, we have not.

What is the direction of bias introduced by the lack of correction? In general, it would seem to be downward; that is, the output indexes would rise more than they do if account were taken of the improved quality of milk, fruit, metal ores, etc. and the greater usability of different crude oils, ores, and even food materials, with the improvement of technology. The greater accessibility of materials that came with the fall in transportation costs, and the spread of population to areas nearer the sources of materials, are additional factors of improvement not taken into account in our indexes of output for individual commodities, or for groups of resources taken together.

The Data — Consumption and Imports

In general, our data are those for "apparent consumption," that is, output plus net imports (or minus net exports). Where data were readily available, we have used actual consumption figures. In long historical series, the difference between these two kinds of figures, amounting to increases or decreases in inventories, is not significant. Where there is interest in the distinction between actual and apparent consumption for a particular series or a particular year, the source notes on each table indicate which is supplied.

For a number of commodities no consumption series is shown. These series have been omitted either because they were unimportant in terms of aggregate value in both 1870 and 1957 or because the differences between output and consumption (that is, net imports or exports) were unimportant. In these latter cases, output is treated as equivalent to consumption in the computation of our group and total consumption indexes.

Our "mine value" weights sometimes seem unsatisfactory for the consumption indexes. In the metals, in particular, we use the 1954 value weights listed in Table E, which are equal to the product of the volume in the second column multiplied by the price in the third column. (This

TABLE E. Metals: 1954 Value Weights

	Value ($ mil.)	Volume (metal content, mil. tons)	Price (at mine, of metal recoverable from ore; $/ton)
Iron	650	47.1	13.8
Copper	608	1.235	492
Aluminum (bauxite)	58	1.26	46.3
Lead	183	.763	240
Zinc	131	.968	135
Tin (long tons)	103	.0544	1885
Manganese	83	1.15	72
Nickel	53	.095	556
Molybdenum	51	.0253	2000
Gold (ounces)	44	1.270	[1] 35
Silver (ounces)	73	86.0	[1] .35

[1] $/ounce.

is not the actual derivation, however—see source notes on Table MC-13.) The contrast between copper and aluminum with this weighting system seems particularly unsatisfying. The two metals have many similar properties and uses, the ingot prices in 1954 were 29.7¢ and 21.8¢ per pound (Tables MP-19 and MP-23), and the volume consumed in 1954 was a little greater for aluminum; yet the weight assigned by value of the concentrate as it left the mines was 10 times as great for copper as for aluminum. The difficulty is, of course, that the cost of extracting aluminum from bauxite is much greater than that of extracting copper from mine concentrates. For gold and silver, the weights used are too high because no deduction is made for the costs of extraction, as no "concentrates" are sold. For these reasons we present an alternative index (Table MC-14) calculated with finished metal prices as weights. The 1953-57 metal consumption computed with metal weights is 31.9 times 1870-74; with ore weights (our preferred index) it is 30.4 times 1870-74.

Series on exports and imports are usually unsatisfactory as measures of scarcity, since they represent the difference between output and consumption, plus inventory changes (which are subject to short-term speculative movements in many cases). When output and consumption are nearly equal, as they are for most commodities in U. S. commerce, small changes in either may cause very large percentage changes in foreign trade. For this reason we recommend that output and consumption be studied together as a means of understanding imports; this is the way they are presented in the charts on various commodities on pp. 19-52.

A further difficulty with the import and consumption data is that some of them relate to raw materials not produced in the United States and thus cannot be valued at prices equal to those at the producer level in this country. The group indexes on imports and consumption use price weights equal to the landed cost in the United States of the crudest material customarily imported (e.g., nickel matte rather than bars or shot). Where only small amounts of a commodity are produced in the United States, at prices in excess of the cost of imports, the landed cost rather than the price of U. S. output is used.

The highly speculative and government controlled movements of the monetary metals, gold and silver, make their influence on aggregative indexes a confusing one, so we present, for metals, minerals, and all resources, alternative import indexes which omit them. The consumption series for gold and silver are for "reported" rather than "apparent" consumption and are not affected by monetary movements.

The Data — Employment and Employment/Output

Employment data offer an attractive index of the importance and growth of the resource industries: Data are more available than for output of some industries and appear to have greater homogeneity and simplicity. Thus we can say with a considerable degree of accuracy that the resource industries provided 52% of the nation's employment in the 1870's, and 12% in the early 1950's; we cannot say nearly as accurately how much of the output of the economy was produced by the resource industries.

Examination shows, however, that there are also problems besetting employment data. Classifying labor by industry is a difficult job, for which the earlier data (from the census of occupations) are only partially adequate; and the apparent simplicity of adding numbers of men employed leaves unanswered a host of important questions as to the economic significance of the items in our total. Skilled labor may be several times as productive as unskilled, and there are great differences between agriculture and the other industries in the average skills of those employed. There are also wide variations in the number of hours worked by laborers in each industry; slack or shut-down seasons in agriculture and mining in some cases have reduced the average number of hours worked by half or more of the presumed potential. Farmers press their families into service for chores, weeding, harvesting, etc., and the significance of this labor probably changed a great deal between 1870 and 1957. Thus the homogeneity of our employment data is imperfect, both over time and between industries.

The data on employment-to-output ratios present some special problems:

(1) Obviously, they are dependent on the output data as well as on the employment data. But they also depend, for each industry, on correspondence between the employment and the output. This correspondence is made difficult by the fact that employment and output data have often been collected by different agencies and at different times, thus covering somewhat different productive activities or different time periods; by the fact that many materials are partly or wholly the product of activities which produce two or more of them, so that no separation of the labor which produced each is possible; and by the fact that there are often associated activities in the productive process, including manufacturing, selling, and even capital construction and consumption, which use labor but are not properly part of the input which is required for the output of the material in question. As an example, a farm family may have raised corn, peanuts, tomatoes, hogs, and chickens for sale, while producing vegetables, milk, clothing, and eggs for its own consumption and building fences and barns which will be capital equipment. The allocation of labor input to the different activities is very difficult in practice, and in part is insoluble even in theory.

(2) If we took account of the increased inputs of productive factors from other industries, would the relatively steep

rate of decline in employment/output ratio in the resource industries disappear? Agriculture, for example, now purchases a great deal of fertilizer and power, whereas in 1870 these were much less used, and for the most part were produced on the farm. Is the increase in output sold and consumed merely a reflection of the conversion from self-contained operations to sale-and-purchase operations?

It is not possible to make with precision the adjustment called for here, as it would require the subtraction of the values of inputs, in constant prices, from the values of outputs, in constant prices. But we can secure some idea of the magnitude of the adjustment if we use the Department of Commerce estimate of gross national product for farms and the mining censuses which reported value of output, expenses for materials and power used, and the resulting net value added, in current prices.

Table EO-2 presents these estimates of gross and net output in current prices. They indicate that between the 1870's and the 1950's the ratio of value added to value of output fell about 18% for agriculture and 11% for mining; for the two together the figure is about 16%. The accompanying Chart A shows our gross output estimate for agriculture plus mining in 1954 prices, as given in Tables AO-1 and MO-1; and as adjusted downward by the current-price ratios of value added to value of output, for the years for which we have estimates.

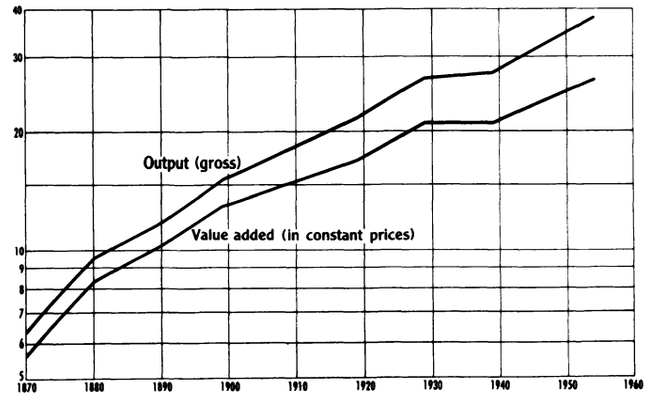


CHART A. Output: agriculture plus mining (sources: Tables AO-1, MO-1, EO-2)

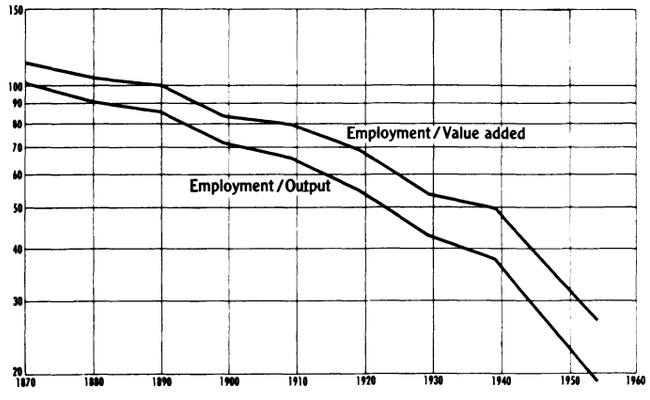


CHART B. Employment/output ratios: agriculture plus mining (sources: Tables EL-1/EO-2; EL-2)

From these adjusted (or net) output estimates we have made employment/output estimates, which are shown in Chart B, together with our unadjusted (preferred) series, for agriculture and mining.

To compute "deflated" or relative employment/output ratios, we should of course make a similar adjustment for manufacturing, the reference series we have used as divisor for the series on employment/output ratios in resource industries. One of the leading research workers in manufacturing statistics has declared this an insoluble problem, however, and stated that the adjustment for manufacturing might be in either direction—that is, that the ratio of value added to value of output might have risen or fallen during the period 1899-1937.[5] If we make the assumption that there is *no* adjustment required in the manufacturing series, then the adjusted estimate for agriculture indicates that the employment-to-net-output ratio fell somewhat less than in manufacturing, whereas the employment-to-gross-output ratio (Chart 47, above, page 16) showed a slightly greater fall for agriculture than for manufacturing. In mining, however, there is a relative decline, in the adjusted series as well as the unadjusted, as compared to the unadjusted manufacturing employment/output series.

(3) What would be the effect of using an average of employment/output ratios in the separate industries, instead of dividing total employment by total output? Taking such an average would eliminate declines in employment/output ratios which result from a redistribution of employment from industries of high employment/output ratio to industries of low ratio (and would eliminate rises from the opposite redistribution). Our preferred series includes such declines, since it is a simple ratio of total employment to total output.

Within the mining sector, we can calculate the alternative index, that of average change in employment/output ratios. Table ML-3 gives this alternate calculation, which is also shown in Chart C with our preferred series. It will be noted that the alternate index shows less decline than the preferred index in the period 1880-1957. This is chiefly because of the large relative growth of petroleum and gas, in which employment bears a lower ratio to output (valued in prices of 1954) than in the other mining industries. The reverse relationship

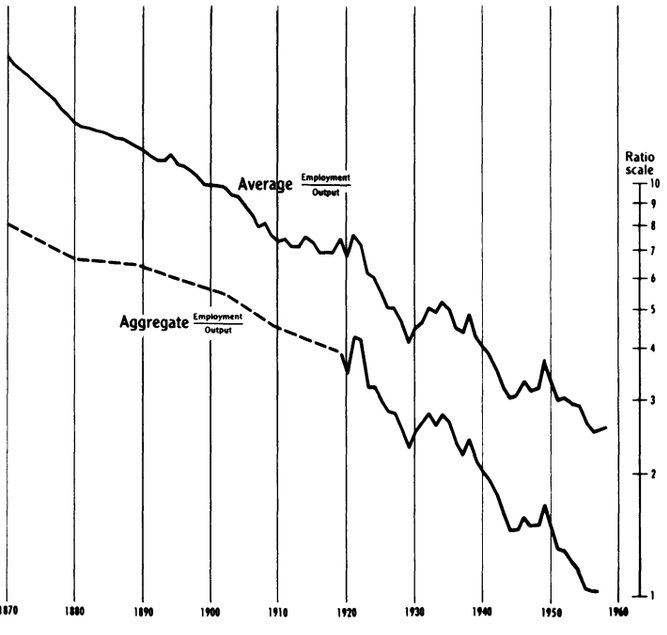


CHART C. Minerals employment/output ratios: aggregate vs. averaging methods (sources: Tables ML-2, ML-3)

[5] Solomon Fabricant, *The Output of Manufacturing Industries, 1899-1937* (National Bureau of Economic Research, New York, 1940), pp. 27-31.

in the 1870-80 movement is due to the domination of the preferred series (aggregate output divided by aggregate employment) by coal in that decade in which the employment/output ratio for coal was nearly stable; while the average series is dominated by the large weight assigned to the petroleum and gas industry by 1954-employment weights, and the fact that oil and gas employment/output fell over 50% in the decade 1870-80.

We do not convert this alternate series into a relative employment/output series, because we do not have a corresponding series for manufacturing.[6]

A similar computation cannot be made for agriculture. There are no clear-cut, separate industries in agriculture, and the estimates of labor requirements which have been made (see Tables AL-3 and AL-4) are, according to their authors, not amenable to such a computation.

Some additional problems relating to employment as a measure of labor inputs, for which we have not made calculations, are: (1) the change in the quality of labor inputs—there can be little doubt that 1957 labor was better educated than that of 1870, and had more favorable working conditions; (2) the reduction in hours of work per year (our labor input series are for average employment); (3) increased inputs of capital. Items (1) and (3) represent increased inputs not reflected in the employment figures. Item (2) would probably show a substantial decrease in labor input in relation to employment.[7] There may have been a large degree of offset between items (1) and (3) and item (2) over the period 1870-1957, so that the employment figures may be a fair measure of the input variation in this period.[8]

[6] Fabricant, in *Employment in Manufacturing, 1899-1939* (National Bureau of Economic Research, New York, 1942), pp. 37-42 and Table G-1, estimates that comparatively little of the decline in employment per unit of product came from such changes in composition of output and employment during the period 1899-1939.

[7] Such data as we have for mining indicates a reduction in hours worked per man per year of 20-30% over the 88-year period. It seems probable that a similar change may have occurred in timber, though the seasonal nature of the business leaves much room for doubt. In agriculture, there seems to be no clear or agreed basis for estimating.

[8] John W. Kendrick in *Productivity Trends in the United States* (National Bureau of Economic Research, 1961) finds nearly identical rises in output per person and output per unit of total factor input for mining (Table C-I), 1879-1953, but finds an increase in farming of 166% per person and 115% per unit of total factor input (Table B-I). The reason for the difference is in part his allowances for reductions in hours per worker: 21% for mining, 12% for farming. There is extremely little basis for making these allowances for hours.

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This list provides the full references to source materials frequently cited in abbreviated form in the source notes to the statistical tables. It does not include the titles of sources used only a few times; these are given in full in the source notes.

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BLS mimeo. U.S. Department of Labor, Bureau of Labor Statistics, mimeographed tables of currently published indexes of wholesale prices giving monthly and annual indexes back to 1926; brought up to date by the Division of Prices and Cost of Living.

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Symbols Used in Tables

* Less than half a unit.
( ) Extrapolation, interpolation, or estimate.
n.a. or blank Not available.
p Preliminary.
† Years ended June 30.
N Negligible.

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(cont'd)

Group or commodity	Price	Output	Imports and exports	Consumption	Employment	Employment/ output ratio
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Group or commodity	Price	Output	Imports and exports	Consumption	Employment	Employment/ output ratio
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SUMMARY: Indexes for Sectors

This table summarizes our measures of resource commodities for all extractive industries and for each major sector and subsector.

For easy reading and comparison, each measure is given as an index number, with 1947-49 as 100. The number of the table from which each column is derived is given at the head of the column. 1954 weights are used in each case where there is a choice among alternative weights.

Indexes of foreign trade are not given because in each basic table our final figure is net imports, which do not offer a suitable base for index numbers. This is because net imports may be negative as well as positive, and the base (1947-49) may approach zero, causing the indexes for other years to approach infinity.

In addition to the indexes for natural resource sectors, the table includes comparison series at the end, so that the prices, outputs, etc. of resources may be placed beside similar measures for the economy as a whole and compared with the growth of population.

SUMMARY: Indexes for Sectors

(1947-49 = 100)

	All extractive					Agriculture					Crops		
	Price	Output	Consumption	Employment	Employment/output	Price	Output	Consumption	Employment	Employment/output	Price	Output	Employment/output
Source (Table & Col.)	EP-1(G)	EO-1(G)	EC-2(G)	EL-1(E)	EL-2(E)	AP-1(G)	AO-1(G)	AC-5(J)	AL-1(H)	AL-2(E)	AP-2(Z)	AO-2(Z)	AL-3(J)
1870	56.7	21.9	19.0	70.0	321	37.7	24.6	20.4	77.8	315	46.9	24.3	
1871	57.4	22.2	20.5			34.2	25.0	22.4			47.6	23.9	
1872	52.9	23.9	21.3			33.0	27.1	23.2			43.6	26.8	
1873	41.5	23.9	20.3			33.6	26.7	21.6			46.0	24.8	
1874	37.0	23.7	20.7			34.5	26.3	22.0			50.4	25.3	
1875	36.6	24.9	21.3			32.7	28.3	22.8			40.9	30.9	
1876	42.5	25.4	21.5			30.9	28.7	23.2			37.3	30.9	
1877	39.1	27.9	23.3			28.0	32.4	25.7			34.6	34.3	
1878	27.7	28.8	23.1			23.6	33.7	25.3			29.8	35.6	
1879	27.0	30.0	23.7			25.4	34.9	25.7			36.2	37.9	
1880	30.3	30.9	24.5	94.8	306	28.3	36.1	26.5	104	288	38.1	39.9	
1881	33.4	29.6	24.7			32.8	33.7	26.5			48.8	32.6	
1882	32.1	32.6	27.2			31.9	37.8	29.8			39.1	43.6	
1883	32.3	32.6	28.2			30.5	37.3	31.0			35.9	40.2	
1884	29.1	34.9	29.8			28.4	40.6	33.4			31.5	45.6	
1885	27.1	34.5	29.6			25.5	39.8	33.0			32.1	45.2	
1886	25.2	34.7	29.6			24.2	39.8	32.6			31.1	44.5	
1887	26.2	35.2	30.0			25.7	39.4	32.6			34.3	41.9	
1888	27.7	36.6	31.8			26.5	41.0	34.2			32.4	50.1	
1889	26.4	38.1	32.4			23.9	43.1	35.5			28.0	52.1	
1890	27.5	38.4	32.6	113	295	26.0	42.7	34.6	121	283	37.8	45.3	
1891	26.2	43.9	37.5			25.3	50.9	42.0			32.4	58.5	
1892	25.2	37.5	33.0			25.5	40.2	34.6			32.1	49.6	
1893	26.2	37.5	32.8			26.3	40.6	34.2			30.0	49.2	
1894	24.2	39.6	34.1			23.0	43.9	36.7			30.2	49.4	
1895	25.6	40.9	35.9			22.0	45.1	38.3			25.6	56.4	
1896	24.2	43.7	36.7			20.8	49.2	39.9			23.9	59.4	
1897	23.4	45.8	36.3			22.2	52.1	38.7			26.4	59.3	
1898	23.8	47.9	38.3			21.5	55.0	41.2			24.9	63.9	
1899	27.3	48.2	39.5			22.9	54.2	41.6			27.0	63.3	
1900	29.5	49.2	40.1	123	250	25.1	54.6	42.0	129	237	30.6	63.1	
1901	29.5	49.4	41.8			26.7	54.2	43.6			37.9	55.6	
1902	30.1	50.3	43.6			27.9	55.0	45.7			31.4	69.6	
1903	31.3	52.0	46.4			28.0	55.8	48.1			34.1	65.3	
1904	30.3	53.9	47.2			27.7	58.3	49.7			34.5	70.8	
1905	29.7	54.3	48.2			28.5	57.5	49.3			33.5	71.5	
1906	29.9	57.5	50.7			28.5	61.6	52.2			33.7	76.0	
1907	32.1	57.5	50.9			31.3	58.3	50.5			41.3	66.2	
1908	31.7	56.9	50.5			31.6	60.3	52.6			42.0	69.5	
1909	33.8	57.1	53.5			35.1	58.3	54.6			43.5	68.7	
1910	34.8	58.6	54.3	133	225	37.2	59.5	54.6	137	230	42.2	70.8	222
1911	32.7	61.2	54.1			34.1	63.6	55.0	137	215	47.1	69.9	238
1912	34.6	62.9	56.4			35.5	64.8	57.1	137	212	40.2	79.7	208
1913	38.0	63.3	55.9			37.9	64.4	55.4	137	213	44.9	69.9	233
1914	36.2	65.0	57.4			37.0	69.4	59.5	137	198	42.7	78.8	217
1915	37.0	64.1	60.6			37.5	67.3	64.0	138	204	44.3	79.9	200
1916	50.8	64.3	59.0			48.0	64.4	58.3	138	214	66.5	70.6	222
1917	69.8	64.8	61.8			67.6	64.4	62.0	137	213	92.0	75.7	213
1918	77.9	67.5	61.2			75.6	68.9	61.1	136	196	95.0	76.6	217
1919	82.6	64.1	59.6	131	204	84.1	66.9	61.1	134	200	106	76.4	208
1920	79.7	67.1	62.4	133	198	66.6	68.1	62.0	136	199	61.0	84.3	196
1921	54.9	59.9	55.7	132	221	49.3	62.8	57.1	136	216	49.1	70.1	204
1922	54.3	65.4	65.1	132	202	49.2	68.9	68.1	135	196	55.2	74.8	196
1923	54.5	71.8	69.3	132	183	52.0	70.6	68.5	133	189	60.6	75.6	200
1924	54.1	71.6	67.5	129	181	52.0	72.6	67.7	132	181	66.6	75.8	204
1925	59.0	72.0	70.5	129	179	57.1	72.2	71.3	132	182	60.4	79.7	204
1926	58.2	76.1	71.1	129	169	54.2	76.3	70.9	131	172	55.1	80.9	200
1927	55.3	73.9	73.2	126	170	55.0	73.5	74.2	128	174	59.2	78.5	192
1928	54.3	76.3	74.0	125	164	54.2	77.6	75.0	128	165	54.0	82.9	189
1929	56.5	77.6	76.2	125	162	56.8	75.9	76.2	129	170	56.1	78.9	196
1930	46.4	74.4	72.2	124	166	44.2	77.2	75.4	128	165	40.6	75.5	200
1931	33.6	73.7	67.9	122	165	31.1	82.5	75.0	127	154	25.1	83.6	185
1932	29.3	66.3	63.2	119	180	24.7	76.3	72.6	126	165	22.8	79.4	182
1933	31.1	67.3	68.3	119	176	28.3	75.1	78.3	125	166	36.6	68.5	200
1934	37.2	62.4	68.3	118	188	33.4	65.7	77.0	122	186	50.5	53.0	208
1935	41.3	65.8	64.7	120	183	39.9	68.5	68.9	125	182	39.4	72.5	175
1936	45.2	70.3	76.4	120	170	44.5	70.2	81.9	124	176	57.2	60.4	200
1937	44.7	80.5	74.4	118	147	41.8	82.5	76.2	121	147	37.6	87.8	167
1938	40.3	74.4	72.2	116	156	36.9	78.4	78.3	120	153	32.0	80.1	159
1939	39.0	78.6	78.6	115	146	36.1	81.3	84.0	119	146	35.9	79.0	159
1940	39.9	81.8	84.9	115	140	37.0	82.5	88.9	118	143	37.0	82.2	149
1941	50.6	85.9	91.8	111	129	49.9	84.5	93.3	113	133	51.8	83.5	141
1942	59.4	93.3	93.4	112	120	61.6	94.4	95.4	114	121	62.4	94.6	128
1943	66.7	94.4	99.3	109	116	71.2	95.6	104	112	117	76.5	88.3	132
1944	66.5	97.4	98.9	108	111	70.0	98.9	101	111	112	77.6	94.6	127
1945	70.4	92.5	96.5	104	112	74.9	93.6	99.0	106	113	82.8	90.8	118
1946	81.8	94.8	97.5	101	107	88.2	96.9	99.9	103	106	99.1	95.5	109
1947	98.4	98.2	103	102	103	103	96.4	106	102	106	119	91.6	110
1948	106	104	98.5	99.0	95.7	105	103	95.0	98.6	96.0	94.2	107	96
1949	95.6	98.2	98.1	99.4	101	91.9	101	99.0	99.2	98.1	87.0	101	95
1950	101	100	104	93.5	93.2	97.7	98.9	101	92.8	93.9	101	96.1	88
1951	112	106	107	88.4	83.1	111	103	104	87.2	84.3	108	99.1	89
1952	107	109	109	85.4	78.1	104	109	106	84.1	77.0	106	105	80
1953	102	110	110	82.4	75.1	95.0	108	106	81.1	74.6	97.8	104	78
1954	98.8	108	108	80.8	75.1	90.6	108	105	80.4	74.6	97.3	102	72
1955	95.8	113	113	83.4	73.6	85.6	110	107	83.2	75.2	92.2	106	68
1956	96.0	117	115	82.1	70.6	84.2	112	106	81.4	72.2	92.7	106	62
1957	99.1	113	114	78.3	69.6	87.0	107	106	77.0	71.9	85.5	105	56

	Livestock			Forest products					Fish				
	Price	Output	Employment/ output	Price	Output	Consumption	Employment (1950=100)	Employment/ output (1950=100)	Price	Output	Consumption	Employment	Employment/ output
	AP-26(L)	AO-27(K)	AL-4(D)	FP-1(G)	FO-1(I)	FC-2(I)	FL-1(I)	FL-2(C)	FP-11(H)	FO-15(F)	FC-13(G)	FL-5(K)	FL-6(C)
1870	35.0	28.1		18.4	(70)	(67)	16	49				(50)	
1871	29.2	30.0		18.6	(71)								
1872	28.3	31.5		19.2	(72)								
1873	29.1	30.8		19.4	(73)								
1874	29.8	30.0		18.6	(74)								
1875	30.1	30.7		17.0	(75)								
1876	27.5	32.3		16.0	(76)								
1877	24.5	35.9		15.3	(77)								
1878	20.3	37.1		14.0	(78)								
1879	20.0	37.9		14.2	78.9	(76)							
1880	24.6	37.7		15.3	(81)		28	60	(20)	37.4	48	(75)	(200)
1881	26.7	38.1		16.3	(82)					34.2	45		
1882	29.5	38.5		17.0	(83)					35.7	47		
1883	28.1	41.7		16.6	(85)					34.8	45		
1884	27.3	44.0		16.6	(86)					33.9	46		
1885	22.9	44.4		15.8	(88)					32.8	45		
1886	21.7	43.2		16.0	(89)					32.2	43		
1887	23.0	43.6		16.3	(90)				19.6	31.1	42	85	270
1888	23.8	44.5		16.0	(91)				20.7	34.4	47	87	250
1889	21.5	46.6		16.0	92.6	(84)			16.6	38.8	55	100	260
1890	21.3	46.8		16.0	(94)		61	87	17.5	40.3	53	106	260
1891	22.9	52.9		15.8	(95)				26.4	38.8	50	(106)	
1892	23.3	41.4		15.3	(96)				20.2	37.7	48	(106)	
1893	26.0	42.0		15.5	(97)				28.8	37.4	48	(106)	
1894	22.4	44.4		15.3	(98)				21.2	37.0	48	(106)	
1895	21.1	46.6		14.7	(99)				14.6	36.6	44	(112)	
1896	19.0	51.7		14.7	(101)					37.0	47	(112)	
1897	19.7	54.0		14.2	(102)				17.8	36.8	47	110	300
1898	20.3	55.2		15.0	(104)				20.0	38.5	50	(112)	
1899	21.7	56.8		16.6	105	(99)				41.6	54	(112)	
1900	23.4	57.0		17.8	108	101	71	73	19.9	44.5	58	(112)	
1901	24.5	56.6		17.5	110	104			25.0	46.4	60	(112)	
1902	27.7	54.2		17.6	113	107			22.5	48.0	62	(112)	
1903	26.1	57.8		17.3	115	108				46.9	61	(106)	
1904	25.1	57.9		17.5	117	110				46.2	61	(106)	
1905	26.3	58.9		19.5	117	110			39.3	45.6	60	(106)	
1906	27.2	60.7		20.3	123	116				45.8	61	(106)	
1907	28.5	61.5		21.5	133	118			34.6	45.8	61	(100)	
1908	28.5	61.7		20.9	119	112			26.2	46.4	62	100	217
1909	31.8	59.9		21.9	124	116			33.9	46.6	63		
1910	35.2	61.2	143	21.7	125	117	88	76	29.1	47.7	65	(106)	(223)
1911	31.2	63.2	141	21.4	122	114			33.3	49.5	67		
1912	34.0	63.6	141	22.4	125	115			25.2	52.3	69		
1913	36.2	65.0	139	22.7	123	114				52.6	72		
1914	37.0	66.1	139	21.7	117	110				54.5	81		
1915	35.2	67.9	135	20.9	111	106				56.1	73.1	(87)	
1916	40.2	68.4	139	29.2	116	111				56.9	72.4		
1917	56.2	67.4	137	37.6	109	105			59.9	59.8	73.1	(81)	
1918	66.9	69.7	139	37.3	104	100			35.1	62.2	73.7	(75)	
1919	71.8	67.7	139	45.2	107	103			49.3	58.0	78.9	(75)	(129)
1920	67.6	65.9	141	71.9	108	103	112	122	33.1	57.4	80.8	(75)	(131)
1921	46.0	68.5	139	36.9	96.7	92.2			40.8	52.8	74.4	(75)	
1922	44.5	73.3	133	36.5	105	101				54.5	80.8	(69)	
1923	46.1	76.1	132	41.6	113	108			34.8	53.4	78.9	(69)	
1924	44.9	74.8	135	36.2	110	105			50.6	56.7	82.1	(75)	
1925	51.8	73.3	137	37.9	110	105			39.0	59.8	83.4	(75)	
1926	53.2	75.4	132	38.5	108	103				62.2	87.9	(75)	
1927	51.4	78.1	130	34.9	105	99.3			37.6	60.0	94.4	78.0	131
1928	54.3	78.6	132	33.8	103	97.7			40.3	66.4	95.7	77.3	117
1929	55.7	78.8	132	34.5	108	102			43.9	78.0	93.7	77.3	100
1930	46.9	80.0	132	31.7	92.5	88.1	88	113	37.5	71.8	81.5	74.8	106
1931	35.0	82.6	133	26.9	76.7	72.8			30.3	58.2	71.8	74.8	129
1932	25.7	82.9	133	22.2	67.3	64.2			23.6	57.4	68.5	70.5	123
1933	24.6	84.8	137	25.6	74.3	70.7			25.7	65.0	71.1	73.0	111
1934	29.0	76.2	145	30.6	76.1	72.4			27.6	89.6	76.3	76.7	86
1935	40.1	72.2	143	29.1	82.2	79.0			30.5	92.2	87.3	78.6	86
1936	41.2	77.3	137	31.0	90.6	88.3			29.1	106	98.3	79.8	74
1937	43.7	76.3	137	38.0	93.8	90.8			32.5	95.5	89.9	81.1	86
1938	39.1	80.4	132	31.7	86.5	83.2			31.2	93.3	92.5	81.1	89
1939	36.9	86.7	127	31.9	93.7	91.1			30.6	97.4	91.8	81.7	83
1940	37.6	88.4	125	38.0	97.5	94.3	96	118	33.3	89.1	90.5	78.0	89
1941	47.7	93.2	122	44.2	107	106			36.1	103	95.7	74.2	71
1942	59.7	103	114	47.2	103	103			50.6	86.3	86.0	68.6	80
1943	69.4	109	109	49.8	97.0	96.3			59.0	89.8	74.4	73.6	83
1944	66.5	106	111	54.0	95.3	94.6			58.6	98.3	85.3	76.1	77
1945	70.8	104	110	54.5	87.0	86.9			75.9	101	104	89.8	89
1946	83.1	102	106	63.0	97.1	96.7			80.8	97.2	96.3	94.8	97
1947	98.5	100	103	95.0	101	99.8			91.9	97.4	95.0	99.2	103
1948	109	97.5	101	107	104	105			104	99.6	102	100	100
1949	92.5	102	96	97.6	94.9	95.3			104	103	103	100	97
1950	94.0	107	93	109	104	109	100	100	109	107	114	100	94
1951	112	111	88	121	104	106			117	96.6	111	99.2	103
1952	102	111	85	117	103	105			116	96.8	112	94.8	97
1953	92.2	111	83	115	105	108			119	97.9	117	95.4	97
1954	85.3	114	81	114	105	108			116	104	118	90.4	89
1955	80.0	117	77	119	109	113			118	105	111	89.8	86
1956	77.8	118	74	122	112	114			126	115	111	88.6	77
1957	83.5	117	72	116	104	105	93	102	131	105	112	86.1	83

(continued on next page)

SUMMARY: Indexes for Sectors (Continued)

1947-49 = 100

	Minerals					Mineral fuels					Metals				
	Price	Output	Consumption	Employment	Employment ÷ output	Price	Output	Consumption	Employment	Employment ÷ output	Price	Output	Consumption	Employment	Employment ÷ output
	MP-1(F)	MO-1(G)	MC-2(F)	ML-1(F)	ML-2(E)	MP-2(G)	MO-2(G)	MC-4(G)	ML-4(D)	ML-5(E)	MP-10(I)	MO-7(N)	MC-13(Q)	ML-12(J)	ML-13(E)
1870	122	3.8	3.29	(16)	508	115	3.2	3.1	12.2	384	79.6	6.9	3.0	46	670
1871	126	3.8	3.42			128	3.2	3.2			84.8	6.9	3.4		
1872	120	4.5	4.28			108	4.0	4.0			119	6.6	4.3		
1873	70.7	5.0	4.66			59.6	4.4	4.3			106	7.2	4.7		
1874	49.7	4.9	4.50			40.8	4.3	4.2			83.9	7.3	4.5		
1875	53.2	4.9	4.33			45.3	4.2	4.1			76.3	7.8	4.0		
1876	83.7	5.0	4.22			77.4	4.1	4.0			67.4	9.3	3.7		
1877	77.7	5.7	4.72			72.0	4.7	4.5			61.2	10.6	4.2		
1878	43.1	5.7	4.66			37.8	4.5	4.3			52.4	11.2	4.7		
1879	34.6	6.7	5.75			28.6	5.7	5.4			56.9	11.0	5.1		
1880	39.9	7.2	6.74	30.5	421	32.4	6.2	6.1	23.2	370	71.0	11.2	7.2	72	650
1881	39.9	7.8	7.07			31.1	6.7	6.4			62.7	11.8	7.1		
1882	36.9	8.7	8.10			27.3	7.4	7.1			66.5	13.2	8.5		
1883	41.3	9.2	8.66			35.8	7.8	7.5			56.6	13.3	9.1		
1884	34.3	9.6	8.85			27.9	8.1	7.8			51.2	13.6	8.6		
1885	35.0	9.8	8.95			29.8	8.2	7.9			44.6	13.8	8.2		
1886	30.3	10.6	9.88			25.0	8.7	8.4			44.1	15.2	10.0		
1887	30.4	11.9	11.3			25.6	9.8	9.5			46.4	16.7	11.2		
1888	34.7	13.4	12.7			29.7	11.1	10.7			55.3	18.2	11.6		
1889	36.0	13.4	12.6	55.3	409	31.1	10.8	10.4	43.2	400	50.4	19.3	12.5	118	610
1890	35.1	14.7	14.0			29.2	12.0	11.6	44.6	372	55.2	20.6	14.2		
1891	31.5	15.6	14.7			23.7	12.9	12.5	46.6	359	48.7	21.3	14.1		
1892	27.4	16.3	15.4			20.7	13.4	13.0	48.0	357	43.7	23.5	15.7		
1893	28.2	15.9	14.8			23.6	13.6	13.0	51.0	375	40.5	20.6	13.0		
1894	29.7	15.2	13.6			26.9	12.9	12.3	53.0	409	35.5	20.9	11.8		
1895	38.8	17.0	16.0			38.4	14.4	13.8	53.9	373	38.3	24.6	17.0		
1896	36.2	17.3	15.5			34.7	14.5	13.8	55.3	381	38.5	26.7	15.0		
1897	29.0	17.7	15.9			25.3	14.8	14.1	56.0	377	38.4	28.9	16.6		
1898	33.1	18.8	17.2			29.4	15.7	15.0	56.6	359	39.7	31.4	19.7		
1899	43.2	21.2	19.7			40.1	17.9	17.2	57.9	323	59.5	35.4	23.6		
1900	45.5	22.4	20.2			43.1	18.8	18.0	63.1	334	57.4	39.3	24.0		
1901	40.6	23.9	220			37.0	20.7	19.8	68.3	329	53.4	40.0	26.0		
1902	39.8	24.3	23.0	84.4	346	36.0	20.6	19.8	73.0	353	52.1	45.1	32.4	148	330
1903	44.0	28.5	26.9			40.7	25.3	24.8	79.8	314	53.1	45.3	31.4		
1904	41.3	28.6	264			38.3	25.6	24.8	83.7	326	47.1	44.7	29.1		
1905	35.8	32.2	30.0			30.5	28.5	27.5	88.2	309	55.2	54.6	36.8		
1906	36.4	33.2	31.2			29.4	29.1	28.0	90.2	309	66.8	58.7	41.4		
1907	37.0	37.5	34.6			29.3	34.4	33.3	95.9	278	71.0	59.4	39.6		
1908	34.3	34.2	30.4			28.3	31.4	30.0	97.4	309	50.3	51.8	30.3		
1909	33.0	38.1	35.0	111	289	26.7	33.8	32.4	101	297	50.8	64.7	43.2	177	270
1910	31.0	41.2	38.1			24.5	36.9	35.6	103	278	49.9	67.8	46.0		
1911	30.9	40.6	37.3			24.7	37.3	35.7	104	277	47.8	61.9	40.5		
1912	35.5	43.5	40.0			29.7	39.1	37.4	105	267	56.4	71.0	49.2		
1913	42.0	46.4	42.6			38.0	42.1	40.3	109	259	54.3	74.7	50.6		
1914	37.8	43.0	38.6			33.3	39.7	37.7	113	283	48.3	64.4	39.9		
1915	39.9	45.6	41.9			27.9	41.1	39.7	100	243	60.2	78.6	52.6		
1916	63.9	51.8	47.6			46.2	44.8	43.2	108	240	86.5	101.0	66.9		
1917	84.9	55.2	50.2			68.8	49.7	47.7	114	230	107	101.0	65.9		
1918	95.9	55.8	51.8			86.1	51.6	49.9	116	224	96.3	98.8	71.2		
1919	88.5	48.2	45.0	121	249	84.1	45.4	44.3	119	262	76.8	75.1	52.0	161	213
1920	121	55.1	52.4	123	222	125	53.0	51.4	121	228	86.5	78.7	61.9	154	195
1921	75.9	44.6	43.2	122	272	75.6	46.0	46.6	128	277	51	39.2	33.5	97	247
1922	74.1	47.6	48.8	127	266	74.9	45.7	48.9	132	289	57.3	60.4	49.9	117	293
1923	65.3	64.9	61.4	134	205	63.0	62.6	60.6	136	217	63.5	84.6	66.9	139	164
1924	64.6	60.5	57.9	125	205	62.7	57.5	57.1	124	215	57.6	81.2	60.6	140	172
1925	70.8	62.7	59.8	120	191	70.3	58.4	57.4	119	203	60.5	88.7	67.4	140	158
1926	74.9	67.7	63.2	122	180	75.5	63.7	60.4	122	191	58.5	93.3	72.9	143	152
1927	61.5	68.3	63.8	122	178	59.1	64.7	62.2	123	189	54.6	88.1	67.3	131	148
1928	60.3	67.7	64.7	112	164	57.7	63.5	62.4	111	174	53.9	90.3	71.2	125	139
1929	61.6	73.4	70.0	109	148	58.7	68.9	67.4	107	155	61.3	100.6	79.0	133	132
1930	56.9	64.3	60.4	104	161	54.1	61.6	60.2	104	168	51.3	78.4	59.0	110	140
1931	42.7	53.9	50.5	91.5	170	37.5	54.5	53.5	93.2	170	40.1	51.8	39.2	85	164
1932	44.2	43.9	41.7	78.7	179	40.8	47.5	47.3	83.4	175	33.0	27.0	21.5	52	190
1933	40.2	48.2	45.4	80.7	167	35.1	52.6	50.7	85.5	162	39.2	30.7	30.3	53	172
1934	49.8	51.3	47.3	90.8	177	46.6	54.9	52.9	96.3	175	44.4	37.7	29.1	64	171
1935	48.5	55.1	51.2	94.3	170	45.3	58.2	55.7	96.3	165	45.0	48.1	38.8	97	201
1936	51.1	64.9	60.5	99.2	152	48.0	65.4	62.3	100	152	47.7	69.8	56.5	107	152
1937	55.0	72.8	66.4	104	142	51.2	71.4	68.0	103	144	59.5	93.5	64.6	131	140
1938	52.5	61.8	55.0	96.4	155	48.8	63.6	59.5	96.2	151	51.6	57.0	38.9	116	204
1939	49.0	68.7	63.2	95.3	138	44.7	68.4	64.2	92.7	135	52.7	78.1	60.9	130	166
1940	49.4	76.5	73.8	99.4	129	44.8	74.8	72.8	95.8	127	55.9	98.2	86.0	143	145
1941	54.2	83.7	85.1	104	123	50.2	79.8	79.2	99.0	124	59.2	113	118	151	132
1942	56.4	89.0	87.0	101	114	52.4	83.5	79.7	96.4	115	60.5	128	122	139	108
1943	58.3	90.8	90.9	92.7	102	54.6	88.1	86.7	89.5	101	60.8	122	118	123	101
1944	59.9	95.0	94.1	89.4	94	56.2	95.7	91.7	89.0	93	60.8	111	118	103	93
1945	61.0	92.1	93.3	86.8	94	57.3	94.1	92.2	88.0	93	61.8	95.5	110	87	91
1946	68.3	90.4	92.5	91.9	101	65.2	93.2	91.8	92.3	99	68.5	77.0	98.5	90	116
1947	86.5	101	98.9	97.8	96	84.5	102	98.5	97.4	95	91.0	102	102	102	101
1948	108	106	105	102	96	109	106	105	102	95	105	105	104	102	97
1949	106	92.5	96.3	99.9	108	106	91.4	96.5	100	109	104	93.2	93.8	95	102
1950	107	103	109	98.5	95	107	101	105	98.0	97	108	109	121	95	87
1951	111	114	115	96.7	84	109	112	114	95.3	85	127	117	114	99	84
1952	111	112	116	93.7	83	109	110	115	92.1	84	127	108	113	97	88
1953	117	114	121	90.2	78	116	111	118	86.8	78	132	119	127	105	88
1954	118	109	116	81.7	75	117	106	115	77.3	73	134	94.3	106	95	101
1955	120	120	129	82.0	68	117	116	126	77.7	67	148	115	123	94	82
1956	123	127	135	84.6	66	120	123	133	79.8	65	160	118	125	100	85
1957	129	128	135	85.5	66	129	123	132	79.9	65	142	120	122	107	88

	Nonmetals					Comparison series				
	Price	Output	Consumption	Employment	Employment ÷ output	General wholesale price index	Population	Gross national product	Manufacturing output	Manufacturing employment ÷ output
	MP-26(M)	MO-20(M)	MC-32(O)	ML-26(K)	ML-27(C)	N-1(F)	N-2(B)	N-3(I)	N-4(H)	N-8(C)
1870		(4.7)	(4.9)			56.4	27.2	7.3	4.0	350
1871						53.8	27.9	7.6	4.2	
1872						54.9	28.6	8.6	5.0	
1873						54.4	29.3	8.6	4.8	
1874						52.6	30.0	8.6	4.6	
1875						50.5	30.7	9.0	4.5	
1876						46.8	31.4	9.0	4.5	
1877						43.9	32.1	10.0	4.8	
1878						40.1	32.8	10.7	5.1	
1879						38.2	33.6	11.4	5.8	330
1880	65.3	(10.3)	(10.8)	55	534	42.3	34.3	12.4	6.7	300
1881	79.7					41.9	35.1	12.8	7.4	
1882	77.0					43.0	36.0	13.8	7.8	
1883	65.3					42.0	36.9	13.8	8.0	
1884	62.6					39.3	37.8	14.2	7.5	
1885	61.5					36.8	38.6	14.2	7.5	
1886	54.1					36.4	39.5	15.6	9.1	
1887	49.3					36.7	40.4	15.9	9.6	
1888	51.4					37.3	41.3	16.6	9.9	
1889	57.3	27.4	28.4	101	369	37.3	42.1	17.3	10.6	250
1890	58.2					36.5	43.0	18.3	11.4	245
1891	69.2					36.3	43.9	19.7	11.7	245
1892	57.9					33.9	44.8	19.0	12.6	240
1893	49.1					34.7	45.7	18.0	11.2	250
1894	43.4					31.1	46.6	18.3	10.9	245
1895	42.1					31.7	47.4	20.0	13.0	225
1896	44.0					30.2	48.3	20.4	11.8	245
1897	45.7					30.3	49.2	21.4	12.8	240
1898	52.1					31.5	50.1	23.5	14.6	220
1899	51.1					33.9	51.0	24.5	16.0	220
1900	52.2					36.5	51.9	24.9	16.3	220
1901	54.0					35.9	52.9	27.0	18.4	205
1902	55.2	29.3	30.7	123	421	38.3	54.0	28.7	20.6	200
1903	58.3			(124)		38.7	55.0	29.7	21.1	200
1904	55.7			(126)		38.8	56.0	29.4	19.8	205
1905	55.7			(129)		39.1	57.2	32.8	23.7	185
1906	59.2	35.5	37.3	(133)	374	40.2	58.3	34.9	25.4	185
1907	60.9	35.6	36.1	(134)	376	42.4	59.3	35.6	25.8	185
1908	61.1	35.2	33.1	(134)	380	40.9	60.5	34.9	21.3	205
1909	60.3	39.8	40.6	138	345	43.9	61.7	36.0	25.3	200
1910	58.4	42.4	43.1	(133)	313	45.8	63.0	36.9	26.9	190
1911	58.1	42.3	43.6	129	305	42.2	64.0	37.8	25.8	200
1912	57.7	44.7	43.9	129	289	44.9	65.0	40.1	29.6	185
1913	58.3	46.3	46.4	128	276	45.4	66.3	40.4	31.7	180
1914	59.2	44.0	42.0	118	268	44.3	67.6	38.7	29.8	180
1915	102	42.4	41.1	116	273	45.2	68.6	38.5	35	153
1916	161	47.8	47.8	110	230	55.6	69.5	41.5	41	153
1917	173	44.2	42.7	105	236	76.4	70.4	41.6	41	159
1918	159	36.8	34.7	88	239	85.3	70.4	45.9	41	159
1919	126	38.1	39.1	90	236	90.1	71.3	45.8	38	186
1920	124	44.1	44.3	102	232	100.4	72.6	43.4	39	179
1921	95.8	39.1	34.8	89	227	63.4	74.0	39.7	30	179
1922	81.1	47.5	46.0	93	195	62.9	75.0	46.0	39	153
1923	81.9	59.5	57.9	111	186	65.4	76.3	51.6	45	153
1924	82.4	59.7	59.3	116	194	63.8	77.8	51.5	43	146
1925	81.7	65.5	64.9	109	166	67.3	79.0	55.9	48	135
1926	83.8	67.9	67.4	107	158	65.0	80.1	59.0	50	133
1927	82.0	72.4	69.4	106	146	62.0	81.2	58.9	50	130
1928	81.9	73.0	71.4	104	142	62.9	82.2	59.4	52	125
1929	80.6	76.4	74.2	101	133	61.9	83.0	62.8	58	121
1930	79.4	68.6	64.2	98	142	56.1	84.0	56.8	48	130
1931	78.7	51.9	47.1	83	159	47.4	84.7	52.9	39	136
1932	74.6	34.9	33.2	63	182	42.1	85.2	45.0	30	151
1933	74.1	33.8	32.0	65	191	42.8	85.7	43.8	36	135
1934	74.8	38.0	36.1	67	177	48.7	86.3	47.9	39	143
1935	72.1	39.8	39.1	73	183	52.0	86.8	52.8	46	130
1936	73.8	54.9	53.4	83	151	52.5	87.4	59.9	55	117
1937	76.0	58.7	57.8	88	149	56.1	87.9	63.4	60	118
1938	77.1	52.2	48.5	78	149	51.1	88.6	60.5	46	133
1939	74.3	59.9	59.2	83	138	50.1	89.3	65.4	57	117
1940	74.6	64.3	61.8	88	137	51.1	90.1	71.1	66	111
1941	76.6	78.9	74.8	101	129	56.8	91.0	82.3	88	100
1942	78.8	85.8	83.4	107	125	64.2	92.0	92.2	110	93
1943	80.5	73.7	78.0	90	122	67.0	93.2	103	133	88
1944	82.7	69.8	74.3	78	112	67.6	94.4	110	130	88
1945	84.6	71.8	75.6	76	105	68.8	95.4	109	110	93
1946	88.9	84.3	87.8	90	108	78.7	96.4	97.6	90	108
1947	95.4	95.5	96.4	98	102	96.4	98.3	97.6	100	102
1948	101	104	105	101	98	104	100	101	103	99.6
1949	104	101	98.3	101	100	99.2	102	101	97	98.2
1950	106	114	115	106	93	103	103	110	113	89.6
1951	111	125	125	107	85	118	105	118	121	90.3
1952	112	129	128	105	81	112	107	122	125	88.9
1953	115	133	132	106	80	110	109	128	136	85.6
1954	115	145	144	109	74	110	111	125	127	85.0
1955	116	159	160	110	69	111	113	136	140	79.6
1956	119	171	169	113	66	114	115	139	144	79.0
1957	120	173	169	115	66	118	117	141	145	77.7

ALL EXTRACTIVE INDUSTRIES (E)

EP-1. ALL EXTRACTIVE INDUSTRIES: Price

	Agriculture	Forest products	Fish	Minerals	Preferred series, all extractive ($ bil.)		
	(billion dollars, 1954 output weights)				1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G
1870	13.32	.557		14.85	8.52	15.6	28.8
1871	12.09	.564		16.47	8.08	15.3	29.2
1872	11.65	.581	(.041)	14.64	7.79	14.6	26.9
1873	11.89	.588		8.58	7.76	13.0	21.1
1874	12.21	.564		6.03	7.67	12.3	18.8
1875	11.57	.516		6.46	7.29	11.8	18.6
1876	10.92	.485		10.16	6.94	12.2	21.6
1877	9.91	.464		9.44	6.32	11.0	19.9
1878	8.34	.423		5.24	5.26	8.57	14.1
1879	8.98	.430		4.20	5.62	8.76	13.7
1880	10.02	.464	(.061)	4.85	6.31	9.98	15.4
1881	11.59	.495		4.85	7.14	10.9	17.0
1882	11.28	.516		4.48	6.89	10.7	16.3
1883	10.77	.502		5.02	6.59	10.4	16.4
1884	10.04	.502		4.17	6.02	9.45	14.8
1885	9.00	.478		4.26	5.64	8.83	13.8
1886	8.55	.485		3.68	5.38	8.36	12.8
1887	9.10	.495	.060	3.69	5.72	8.84	13.3
1888	9.36	.485	.064	4.21	5.88	9.22	14.1
1889	8.45	.485	.051	4.38	5.36	8.59	13.4
1890	9.17	.485	.054	4.26	5.80	8.94	14.0
1891	8.95	.478	.081	3.83	5.50	8.63	13.3
1892	9.00	.464	.062	3.32	5.53	8.54	12.8
1893	9.30	.471	.088	3.43	5.64	8.77	13.3
1894	8.14	.464	.065	3.60	4.94	7.79	12.3
1895	7.78	.447	.045	4.71	4.83	7.96	13.0
1896	7.37	.447		4.40	4.66	7.59	12.3
1897	7.86	.430	.055	3.52	4.92	7.61	11.9
1898	7.60	.454	.061	4.02	4.79	7.59	12.1
1899	8.11	.502		5.25	5.14	8.51	13.9
1900	8.86	.540	.061	5.53	5.67	9.29	15.0
1901	9.45	.530	.077	4.93	5.93	9.37	15.0
1902	9.87	.532	.069	4.83	6.09	9.74	15.3
1903	9.89	.524		5.35	6.27	10.1	15.9
1904	9.78	.530		5.01	6.16	9.77	15.4
1905	10.06	.590	.120	4.35	6.39	9.99	15.1
1906	10.08	.616		4.43	6.44	10.1	15.2
1907	11.05	.651	.106	4.49	6.99	10.8	16.3
1908	11.18	.634	.080	4.17	6.88	10.5	16.1
1909	12.41	.663	.104	4.01	7.61	11.5	17.2
1910	13.16	.657	.089	3.76	8.00	12.0	17.7
1911	12.04	.650	.102	3.76	7.31	11.0	16.6
1912	12.57	.680	.077	4.32	7.57	11.7	17.6
1913	13.41	.688		5.10	8.11	12.5	19.3
1914	13.09	.658		4.59	7.73	11.8	18.4
1915	13.25	.635		4.85	7.96	12.1	18.8
1916	16.98	.884		7.76	10.6	16.1	25.8
1917	23.90	1.14	.184	10.32	14.7	22.6	35.5
1918	26.72	1.13	.108	11.64	16.2	25.0	39.6
1919	29.73	1.37	.152	10.75	18.1	27.4	42.0
1920	23.55	2.18	.101	14.72	15.8	26.4	40.5
1921	17.45	1.12	.125	9.21	11.2	18.1	27.9
1922	17.41	1.11		9.00	11.3	18.3	27.6
1923	18.39	1.26	.107	7.94	12.1	19.0	27.7
1924	18.39	1.10	.155	7.85	11.7	18.1	27.5
1925	20.18	1.15	.119	8.60	12.7	19.7	30.0
1926	19.17	1.17		9.10	11.9	19.0	29.6
1927	19.46	1.06	.115	7.47	12.1	18.5	28.1
1928	19.17	1.03	.124	7.32	11.6	17.9	27.6
1929	20.09	1.05	.135	7.48	12.1	18.6	28.7
1930	15.64	.962	.115	6.91	9.70	15.4	23.6
1931	10.98	.815	.093	5.19	7.03	11.3	17.1
1932	8.75	.672	.072	5.37	5.82	9.52	14.9
1933	10.02	.777	.079	4.89	6.88	10.6	15.8
1934	11.80	.927	.084	6.05	8.05	12.6	18.9
1935	14.10	.883	.093	5.89	9.02	14.0	21.0
1936	15.73	.939	.089	6.21	10.1	15.4	23.0
1937	14.76	1.15	.100	6.68	9.74	15.4	22.7
1938	13.03	.960	.096	6.38	8.57	13.7	20.5
1939	12.75	.968	.094	5.96	8.44	13.2	19.8
1940	13.07	1.15	.102	6.00	8.78	13.8	20.3
1941	17.65	1.34	.111	6.58	11.5	17.7	25.7
1942	21.76	1.43	.155	6.85	13.8	20.8	30.2
1943	25.17	1.51	.181	7.08	15.7	23.4	33.9
1944	24.75	1.64	.180	7.27	15.8	23.7	33.8
1945	26.47	1.65	.233	7.41	16.8	24.9	35.8
1946	31.18	1.91	.248	8.30	19.9	29.4	41.6
1947	36.31	2.88	.282	10.50	24.1	35.6	50.0
1948	37.27	3.25	.318	13.08	25.1	38.2	53.9
1949	32.48	2.96	.320	12.86	22.3	34.3	48.6
1950	34.54	3.30	.335	12.98	24.3	36.5	51.1
1951	39.27	3.67	.359	13.47	27.1	40.4	56.8
1952	36.78	3.54	.355	13.52	25.6	38.7	54.2
1953	33.59	3.48	.366	14.22	24.0	37.1	51.7
1954	32.04	3.45	.355	14.38	23.5	36.1	50.2
1955	30.24	3.62	.360	14.53	22.3	34.9	48.7
1956	29.76	3.69	.386	15.00	22.6	35.4	48.8
1957	30.77	3.53	.403	15.69	23.0	36.1	50.4

EP-1, SOURCES

Computation of Index Weighted with 1954 Outputs:

Col. A, Agriculture. Table AP-1, Col. G, times 1.22.

Col. B, Forest products. Table FP-1, Col. G, transcribed.

Col. C, Fish. Table FP-11, Col. H, times 1.36.

Col. D, Minerals. Table MP-1, Col. F, times 1.20.

Cols. E and F, Preferred series, price indicator, all extractive products, 1902 and 1929 output weights. Computed exactly as Col. G, except that 1902- and 1929-weighted price indicators from the respective source tables were used.

Col. G, Preferred series, price indicator, all extractive products, 1954 output weights. Sums, Cols. A through D, linked for data missing in earlier years.

EP-1, NOTES

( ) Extrapolated figures.

Col. A. The price index for agriculture does not cover all farm products; the factor 1.22 is used to bring the 1954 total up to the value of total farm cash receipts plus the value of farm output consumed on the farm (*Agricultural Statistics 1959*, p. 484). The factors used to raise the 1902- and 1929-weighted agricultural price indexes were 1.32 and 1.20, respectively.

Col. C. The price index gives the aggregate value of the 1954 catch of selected species only; the factor 1.36 is used to bring the total up to the value of the total catch as received by fishermen (U.S. Fish and Wildlife Service, as reported in *Historical Statistics 1960*, series L-111). The factors used for the computation of the 1902- and 1929-weighted indexes were: For the 1902-weighted (Col. E), the 1954-weighted price series (Table FP-11, Col. H) times 1.05; for the 1929-weighted (Col. F), the 1954-weighted price series times 1.27.

Col. D. The price index gives the aggregate value for selected minerals only; the factor 1.20 is used to bring the total up to the aggregate value of all minerals at the mine, as given in *1954 Census of Mineral Industries*, Vol. I, p. A-5. The factors used in this way to apply to the 1902- and 1929-weighted indexes were 1.09 and 1.00, respectively.

EO-1. ALL EXTRACTIVE INDUSTRIES: Output

	Agriculture	Forest products	Fish	Minerals	Preferred series, all extractive ($ bil.)		
	(billion dollars, 1954 prices)				1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G
1870	7.4	2.30		.50	2.64	5.42	10.3
1871	7.5	2.33		.51	2.74	5.58	10.4
1872	8.1	2.37		.60	2.90	5.93	11.2
1873	8.0	2.40		.66	2.90	5.93	11.2
1874	7.9	2.44		.65	2.87	5.93	11.1
1875	8.5	2.47		.65	2.99	6.24	11.7
1876	8.6	2.50		.67	3.08	6.37	11.9
1877	9.7	2.53		.76	3.42	7.02	13.1
1878	10.1	2.56		.75	3.53	7.21	13.5
1879	10.5	2.60		.89	3.65	7.48	14.1
1880	10.8	2.65	.13	.96	3.77	7.76	14.5
1881	10.1	2.70	.12	1.03	3.60	7.44	13.9
1882	11.3	2.74	.12	1.16	3.97	8.18	15.3
1883	11.2	2.79	.12	1.23	3.97	8.21	15.3
1884	12.2	2.84	.12	1.27	4.24	8.69	16.4
1885	11.9	2.88	.11	1.30	4.20	8.69	16.2
1886	11.9	2.92	.11	1.40	4.22	8.75	16.3
1887	11.8	2.97	.11	1.58	4.24	8.84	16.5
1888	12.3	3.01	.12	1.78	4.43	9.25	17.2
1889	12.9	3.05	.13	1.78	4.62	9.57	17.9
1890	12.8	3.09	.14	1.95	4.61	9.56	18.0
1891	15.3	3.12	.13	2.07	5.35	10.7	20.6
1892	12.1	3.16	.13	2.17	4.51	9.29	17.6
1893	12.2	3.20	.13	2.12	4.50	9.30	17.6
1894	13.2	3.23	.13	2.02	4.78	9.83	18.6
1895	13.5	3.27	.13	2.26	4.96	10.3	19.2
1896	14.8	3.32	.13	2.30	5.30	11.0	20.5
1897	15.6	3.37	.13	2.36	5.55	11.4	21.5
1898	16.5	3.41	.13	2.50	5.83	12.0	22.5
1899	16.2	3.46	.14	2.82	5.85	12.1	22.6
1900	16.4	3.55	.15	2.97	5.95	12.3	23.1
1901	16.2	3.62	.16	3.18	5.98	12.3	23.2
1902	16.5	3.72	.16	3.24	6.08	12.6	23.6
1903	16.7	3.77	.16	3.78	6.25	12.9	24.4
1904	17.5	3.85	.16	3.80	6.45	13.4	25.3
1905	17.2	3.87	.16	4.28	6.58	13.5	25.5
1906	18.4	4.06	.16	4.41	6.99	14.4	27.0
1907	17.5	4.37	.16	4.99	6.89	14.1	27.0
1908	18.1	3.93	.16	4.55	6.88	14.1	26.7
1909	17.5	4.07	.16	5.07	6.88	14.1	26.8
1910	17.8	4.10	.16	5.47	7.10	14.5	27.5
1911	19.1	4.02	.17	5.40	7.41	15.1	28.7
1912	19.4	4.10	.18	5.78	7.60	15.5	29.5
1913	19.3	4.04	.18	6.18	7.64	15.6	29.7
1914	20.8	3.84	.19	5.72	7.90	16.1	30.5
1915	20.2	3.64	.19	6.07	7.96	15.7	30.1
1916	19.3	3.83	.19	6.89	7.79	15.6	30.2
1917	19.3	3.60	.21	7.34	7.86	15.8	30.4
1918	20.7	3.42	.21	7.41	8.22	16.3	31.7
1919	20.0	3.54	.20	6.41	7.88	15.7	30.1
1920	20.4	3.56	.20	7.33	8.21	16.3	31.5
1921	18.8	3.18	.18	5.93	7.47	14.9	28.1
1922	20.7	3.45	.19	6.33	8.14	16.2	30.7
1923	21.2	3.72	.18	8.63	8.82	17.4	33.7
1924	21.8	3.62	.19	8.04	8.82	17.6	33.6
1925	21.6	3.62	.21	8.34	8.78	17.6	33.8
1926	22.9	3.56	.21	9.00	9.30	18.5	35.7
1927	22.0	3.45	.21	9.08	9.20	18.0	34.7
1928	23.2	3.41	.23	9.00	9.58	18.7	35.8
1929	22.8	3.55	.27	9.76	9.55	18.8	36.4
1930	23.1	3.04	.25	8.54	9.35	18.4	34.9
1931	24.7	2.52	.20	7.16	9.32	18.3	34.6
1932	22.9	2.21	.20	5.83	8.58	16.8	31.1
1933	22.5	2.45	.22	6.40	8.50	17.0	31.6
1934	19.7	2.50	.31	6.82	7.87	15.8	29.3
1935	20.5	2.71	.32	7.33	8.30	16.6	30.9
1936	21.0	2.98	.36	8.63	8.77	17.4	33.0
1937	24.7	3.09	.33	9.67	10.1	19.8	37.8
1938	23.5	2.85	.32	8.21	9.47	18.6	34.9
1939	24.4	3.08	.33	9.14	9.86	19.6	36.9
1940	24.7	3.21	.31	10.2	10.2	20.3	38.4
1941	25.3	3.51	.35	11.1	10.8	21.2	40.3
1942	28.3	3.39	.30	11.8	11.7	23.2	43.8
1943	28.7	3.19	.31	12.1	11.9	23.6	44.3
1944	29.6	3.14	.34	12.6	12.3	24.2	45.7
1945	28.0	2.86	.34	12.2	11.9	23.2	43.4
1946	29.0	3.20	.33	12.0	12.0	23.8	44.5
1947	28.9	3.33	.33	13.5	12.4	24.2	46.1
1948	30.7	3.42	.34	14.1	13.2	25.6	48.6
1949	30.3	3.12	.35	12.3	12.6	24.6	46.1
1950	29.6	3.43	.37	13.7	12.8	25.1	47.1
1951	31.0	3.44	.33	15.1	13.5	26.3	49.9
1952	32.7	3.41	.33	14.8	14.0	27.4	51.2
1953	32.5	3.45	.34	15.2	14.1	27.5	51.5
1954	32.2	3.44	.36	14.5	13.8	27.4	50.5
1955	33.1	3.59	.36	16.0	14.3	28.5	53.0
1956	33.7	3.68	.39	16.9	14.9	29.6	54.7
1957	32.1	3.41	.36	17.0	14.5	28.7	52.9

EO-1, SOURCES

Computation of Index in 1954 Prices:

COL. A, Agriculture. Table AO-1, Col. G, times 1.23.

COL. B, Forest products. Table FO-1, Col. I, transcribed.

COL. C, Fish. Table FO-15, Col. F, times $.075/lb.

COL. D, Minerals. Table MO-1, Col. G, times 1.19.

COLS. E and F, Preferred series, output of all extractive products, 1902 and 1929 prices. Computed exactly as Col. G, except that sums indicating output in 1902 or 1929 prices in each of the source tables were used.

COL. G, Preferred series, output of all extractive products, 1954 prices. Sum of Cols. A through D, linked for data missing in earlier years.

EO-1, NOTES

COL. A. The farm output index does not cover all commodities; the factor 1.23 is used to raise the 1954 total up to the value of total cash receipts plus the value of farm output consumed on the farm (*Ag. Stat. 1959*, p. 484). The factors used to raise the 1902- and 1929-weighted indexes to the level of farm cash receipts plus home consumption in 1902 and 1929 were 1.29 and 1.20, respectively.

COL. C. The fish series is in billions of pounds; our price weight translates output into values in 1954 prices. The aggregate values are "values to fishermen" of the catch in the United States and Alaska, as reported by the U. S. Fish and Wildlife Service and summarized in *Historical Statistics 1960*, series L-111. The average prices applied to the aggregrate catch for the indexes weighted with 1929 and 1902 prices were: 1929, $.035/lb.; 1902, $.024/lb. (average price in U. S. only).

COL. D. The minerals output series does not include all minerals, so the factor 1.19 is used to raise the aggregate value for 1954 in Table MO-1 to the value of all minerals at the mine, as given in *1954 Census of Mineral Industries*, Vol. I, p. A-5. The factors used to raise the 1902- and 1929-weighted series in Table MO-1 to the Census aggregates for 1902 and 1929 were 1.00 in both cases. (That is, our totals were approximately those of Census for 1902 and 1929.)

EO-2. AGRICULTURE AND MINING: Value of Output and Value Added

(current-dollar figures in billions)

	Agriculture plus mining			Agriculture			Mining		
	Value of output	Value added	Ratio, val. added / output	Value of output	Value added	Ratio, val. added / output	Value of output	Value added	Ratio, val. added / output
	A	B	C	D	E	F	G	H	I
1870	2.93	2.61	89	2.774	2.47	89	.153	.139	91
1880	3.52	3.10	88	3.263	2.87	88	.256	.225	88
1890[a]	3.81	3.26	86	3.397	2.92	86	.416	.335	81
1900[b]	5.07	4.30	85	4.298	3.65	85	.776	.647	83
1910[c]	8.90	7.30	82	7.689	6.36	83	1.208	.940	78
1919	20.42	16.38	80	17.316	13.98	81	3.103	2.396	77
1929	17.51	13.92	79	13.670	10.76	79	3.837	3.162	82
1939	12.84	9.80	76	9.719	7.11	73	3.122	2.685	86
1954	46.37	32.14	69	34.098	22.00	65	12.271	10.143	83

EO-2, SOURCES

COL. A, Sum, Cols. D and G.
COL. B, Sum, Cols. E and H.
COL. C, Col. B/Col. A (percent)
COL. D
1870-1900. Marvin W. Towne and Wayne D. Rasmussen "Farm Gross Product and Gross Investment in the Nineteenth Century" in *Studies in Income and Wealth*, Vol. 24 (National Bureau of Economic Research, New York, 1960), p. 265, "Total gross output, excluding improvements and home manufactures."
1910-1954. "Farm Income and Gross National Product," in *Survey of Current Business*, Oct. 1958, pp. 12-13, "Total value of farm output."
COL. E
1870-1900. Towne & Rasmussen, *loc. cit.* We have adjusted their "Farm gross product, excluding improvements and home manufactures" downward about 3% to allow for an apparent discrepancy in the level of their estimates of "intermediate products consumed" as compared to the estimates of the Department of Commerce, as given in *Survey Cur. Bus.* for 1910-54.
1910-1954. *Survey Cur. Bus., loc. cit.*, "Farm gross national product" plus "Gross rents paid to nonfarm landlords."
COL. F, Col. E/Col. D.
COL. G, Sum of value-of-output columns in Worksheet 1 of this table.
COL. H, Sum of value-added columns in Worksheet 1 of this table.
COL. I, Col. H/Col. G.

EO-2, NOTES

[a] Mining data are for 1889.
[b] Mining data are for 1902.
[c] Mining data are for 1909.

It will be noted that there are discrepancies between the figures given here for value of output and those in Table EO-1. The differences are presumably due to minor differences in definitions and coverage. A reconciliation was not considered necessary, as the objective of this table is the ratios in Cols. C, F, and I, rather than the level of the output figures.

EO-2, WORKSHEET 1. MINING: Value of Output and Value Added

(current-dollar figures in billions)

	Petroleum & gas[a]		Bituminous coal		Anthracite		All metals		Nonfuel	Nonmetals
	V.O.	V.A.	V.O.	V.A.	V.O.	V.A.	V.O.	V.A.	V.O.	V.A.
	A	B	C	D	E	F	G	H	I	J
1870	.019	.018	.035	.033	.038	.035	.047	.041	[b].014	[b].012
1880	.025	.018	.054	.049	.042	.036	.115	.104	.020	.018
1889	.038	.015	.095	.086	.066	.053	.158	.130	.059	.051
1902	.102	.077	.291	.265	.076	.063	.216	.168	[c].091	[c].074
1909	.176	.119	.402	.342	.149	.121	.349	.251	[c].132	[c].107
1919	.824	.576	1.146	.963	.364	.289	.545	.402	.224	[c].166
1929	[d]1.438	[d]1.200	.967	.820	.385	.321	.634	.496	.413	.325
1939	1.369	1.264	.731	.610	.190	.146	.517	.417	.315	.248
1954	7.095	6.118	1.789	1.406	.248	.167	1.361	1.076	1.778	1.376

EO-2, Worksheet 1, SOURCES

COLS. A and B, *1954 Census of Mineral Industries*, pp. 13A-4 and -5, lines 14 and 22 (duplications eliminated as indicated by footnotes in source), "Value of shipments" and "Value added in mining" (adjusted) for "Crude petroleum and natural gas industries" (excluding natural gas liquids but including contract services: see notes below).
COLS. C and D, *Ibid.*, pp. 12A-4 and 5, lines 12 and 15, "Net shipments, total," and "Value added in mining" of "Bituminous coal and lignite industries."
COLS. E and F, *Ibid.*, pp. 11B-4 and -5, lines 16 and 22, "Net shipments, total" and "Value added in mining."
COLS. G and H, *Ibid.*, p. 10A-5, "Value of net shipments" and "Value added in mining" (as corrected) of the "Metal mining industries."
COLS. I and J, *Ibid.*, pp. 14A-4 (as corrected by errata notice): "Value of shipments" less "Minerals received for preparation"; and "Value added in mining" (exclude value added in stone dressing plants, indicated in footnote 1 of source, exclude value of lime produced, indicated in footnote 5 of source, and include data for common clay

and shale and peat, indicated in footnote 2 of source). Cover "Nonmetallic Minerals (Except Fuels) Mining Operations" (including operations included in manufacturing and wholesale trade establishments).

EO-2, Worksheet 1, NOTES

[a] We have attempted to include the value of services rendered by contract well-drillers (etc.) but to exclude values added by the natural gas liquids industries (beyond the values included in natural gas and in field condensate and drips produced by the crude petroleum and natural gas extractors). To arrive at these figures, we made the following adjustments:

1954. Value of shipments: Subtracted "Amount received or due for services" as duplication of value of petroleum and gas (also subtracted it from value added).

1939. Value of shipments: Same as for 1954. Value added in mining: Added expense of "Contract work" (line 38) to restore output of this industry to total, and to make comparable to 1954 data.

1919. Value of shipments: "Natural gas liquids transferred for further processing" and net "Natural gas shipments" subtracted. "Amount received or due for services" *not* subtracted, as approximate offset for omission of "field condensate and drips." Value added: Added "Contract work" (cf. 1939, above); subtracted "Natural gas liquids" as for value of shipments.

1909. Value of shipments: Same as for 1919. Value added: Same as for 1919.

1902. Value added: Same as for 1939.

1889. Value added: No change made. It appears, however, that some correction is needed, for the natural gas report gives a negative value added of $2,139 thousand ($11,045 receipts less $13,184 for materials: *1890 Census, Report on Mineral Industries*, pp. 520 and 525). Perhaps this resulted from poor accounting in a period of heavy capital investment, when the commercial gas industry was just getting started. In particular, it would seem that an item of $7,044 thousand for "pipe, couplings, etc., in building and repairing pipe lines" and part of "all other materials" of $4,915 thousand might be restored to the value-added total. In 1902, the Census reported natural gas sales of $30,868 thousand and cost of supplies and materials of $6,607 thousand; this gives a value-added/value-of-output ratio of 79%. The 1889 ratio for petroleum alone was 65%; for 1902, 75%.

1880. Value added: Same as for 1939.

1870. No adjustment. Value of contract work was not reported, and had not been deducted from value of shipments in deriving value added.

[b] Partly estimated. The following data were available from the *1954 Census* ($ million):

	Value of output	*Value added*
Stone (p. 14B-9)	12.1	11.0
Barite (p. 14H-5)	.10	.09
Native asphalt (p. 14J-6)	.45	.42
Talc, soapstone, etc. (p. 14J-7)	.19	.09
The following speculative estimates were added:		
Clays (cf. pp. 14F-5 ff.)	.35	.29
Sulfur & pyrites (cf. pp. 14H-7 and 8).	.10	.05
Gypsum (cf. p. 14J-4)	.3	.2
Misc. chemical materials (cf. p. 14H-9).	.1	.1
Other nonmetals	0	0
Totals	13.7	12.2

[c] The table at the bottom of the page contains data for sand and gravel and for cement rock estimated and added to Census data of p. 14A-4 (estimates for 1870-89 were negligible).

[d] No census of petroleum and gas was made in 1929. We have used the data from *Mineral Resources of the U.S., 1929*, Vol. II, pp. 320 and 425, for value of output, as these reports agree closely with the Census in other years. The value-added figure is a guess, based on an interpolation of the value-added/value-of-output ratios between the 1919 and 1939 levels of 70% and 92%.

	Sand and gravel		*Cement and lime rock*		Basis
	Value of output	Value added	Value of output	Value added	
1919	43	34	16	12	*Sand and gravel:* 1929 output $112.4 million; value added, $89.2 million (= 79% of output value). 1919 output 35% of 1929 (Table MO-26), price about 110% of 1929 (Tables MP-32 and 31). Accordingly, .35 × $112.4 × 1.10 = 43. .79 × 43 = 34. *Cement and lime rock:* Output 1929, $31.0 million; 1929 value added estimated at $23.4 million, based on 1939 ratio of value added/value of output (75%). 1919 *cement* output 47% of 1929 (Table MO-24) and price 112% of 1929. 31.0 × .47 × 1.12 = 16. .75 × 16 = 12.
1909	20	16	6	5	*Sand and gravel:* Same method and sources as for 1919: output 85% of 1919, price in 1913 about 55% of 1919. *Cement and lime rock:* Same method and sources as for 1919: cement output 82% of 1919, price 48%.
1902	8	6	4	3	*Sand and gravel:* Same method: output 28% of 1909, price perhaps 50% higher (cf. Tables MP-32 and 31, Col. B). *Cement and lime rock:* Same method: cement output 39% of 1909, price 149%.

EC-1. ALL EXTRACTIVE INDUSTRIES: Net Imports

	Agriculture	Forest products	Fish	Minerals	Minerals except gold and silver	All extractive ($ bil.)			Preferred series, all extractive except gold & silver ($ bil.)		
	(billion dollars, 1954 prices)					1902 prices	1929 prices	1954 prices	1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G	H	I	J	K
1870	-.75			-.021	.025	-.206	-.369	-.82	-.178	-.340	-.77
1871	-.49			-.092	.028	-.189	-.299	-.62	-.113	-.221	-.49
1872	-.76			-.061	.030	-.232	-.406	-.87	-.176	-.346	-.78
1873	-1.13			-.063	.021	-.325	-.597	-1.27	-.273	-.542	-1.18
1874	-.92			-.027	.016	-.235	-.444	-1.00	-.209	-.416	-.96
1875	-1.07			-.097	.012	-.321	-.575	-1.24	-.253	-.503	-1.12
1876	-1.09			-.050	.006	-.298	-.564	-1.21	-.265	-.528	-1.15
1877	-1.43			-.013	-.002	-.378	-.730	-1.53	-.372	-.723	-1.52
1878	-1.74			.005	.004	-.430	-.845	-1.84	-.434	-.846	-1.84
1879	-1.89			-.004	-.001	-.518	-.944	-2.01	-.519	-.944	-2.01
1880	-2.07		.004	.166	.027	-.450	-.940	-2.02	-.541	-1.03	-2.17
1881	-1.48		.005	.175	.004	-.269	-.624	-1.38	-.378	-.738	-1.56
1882	-1.65		.006	.002	.006	-.410	-.790	-1.74	-.409	-.788	-1.74
1883	-1.18		.007	.003	*	-.281	-.566	-1.24	-.285	-.569	-1.25
1884	-1.33		.018	-.056	-.014	-.364	-.684	-1.45	-.339	-.657	-1.41
1885	-1.33		.019	*	-.018	-.306	-.637	-1.39	-.320	-.649	-1.41
1886	-1.45		.009	.002	0	-.377	-.740	-1.53	-.348	-.707	-1.53
1887	-1.41		.010	.050	-.001	-.292	-.673	-1.43	-.327	-.707	-1.49
1888	-1.45		.013	.022	-.013	-.316	-.669	-1.50	-.340	-.691	-1.54
1889	-1.65		.011	-.123	-.016	-.471	-.922	-1.87	-.405	-.853	-1.76
1890	-1.92		.011	-.020	*	-.462	-.962	-2.05	-.453	-.952	-2.03
1891	-2.33		.007	-.147	-.019	-.656	-1.24	-2.62	-.580	-1.16	-2.49
1892	-1.71		.004	-.029	-.015	-.437	-.897	-1.84	-.431	-.889	-1.83
1893	-1.87		.004	-.215	-.037	-.560	-1.07	-2.21	-.450	-.952	-2.02
1894	-2.05		.008	-.147	-.086	-.542	-1.10	-2.32	-.506	-1.06	-2.26
1895	-1.56		.005	-.124	-.032	-.442	-.853	-1.78	-.386	-.794	-1.69
1896	-2.04		.004	-.263	-.077	-.627	-1.13	-2.44	-.514	-1.01	-2.24
1897	-2.94		.004	-.044	-.046	-.754	-1.50	-3.16	-.778	-1.52	-3.17
1898	-2.93		.007	-.080	-.055	-.654	-1.43	-3.19	-.753	-1.53	-3.16
1899	-2.47		.006	0	-.055	-.593	-1.20	-2.61	-.630	-1.24	-2.68
1900	-2.58		.008	-.111	-.073	-.656	-1.32	-2.85	-.635	-1.29	-2.81
1901	-2.33		.005	-.018	.001	-.551	-1.06	-2.49	-.541	-1.05	-2.47
1902	-2.05		.009	-.040	-.009	-.491	-1.04	-2.21	-.474	-1.02	-2.18
1903	-1.71		.010	-.024	.014	-.527	-.778	-1.83	-.506	-.754	-1.79
1904	-2.05		.011	-.093	-.091	-.444	-1.02	-2.26	-.443	-1.02	-2.26
1905	-1.96		.014	-.168	-.066	-.494	-1.10	-2.24	-.432	-1.03	-2.14
1906	-2.44	-.108	.015	.048	-.028	-.465	-1.09	-2.48	-.509	-1.14	-2.56
1907	-2.05	-.122	.020	.002	-.093	-.398	-.979	-2.15	-.454	-1.04	-2.24
1908	-1.87	-.113	.021	-.085	-.200	-.337	-.851	-2.05	-.405	-.921	-2.16
1909	-1.01	-.092	.020	-.218	-.111	-.216	-.581	-1.30	-.151	-.515	-1.19
1910	-1.44	-.108	.026	-.246	-.093	-.308	-.754	-1.77	-.216	-.659	-1.61
1911	-2.16	-.133	.036	-.111	-.172	-.360	-1.01	-2.37	-.395	-1.04	-2.43
1912	-1.73	-.141	.031	-.174	-.134	-.307	-.827	-2.01	-.282	-.800	-1.97
1913	-1.81	-.153	.026	-.233	-.172	-.332	-.878	-2.17	-.294	-.839	-2.11
1914	-1.81	-.078	.033	-.385	-.263	-.420	-.920	-2.24	-.346	-.844	-2.12
1915	-1.29	-.019	.038	-.182	-.188	-.143	-.518	-1.45	-.146	-.521	-1.46
1916	-1.02	-.018	.020	.765	-.144	.504	.198	-.253	-.036	-.359	-1.16
1917	-.31	-.005	.033	.081	-.213	.332	.106	-.201	.158	-.073	-.495
1918	-1.78	.016	.037	-.158	-.030	-.218	-.702	-1.88	-.135	-.617	-1.76
1919	-1.51	-.019	.030	-.613	.036	-.313	-.746	-2.11	.078	-.344	-1.46
1920	-1.59	-.005	.043	.213	.063	-.053	-.280	-1.34	-.141	-.371	-1.49
1921	-1.43	-.014	.052	1.30	.077	.640	.344	-.092	-.091	-.407	-1.31
1922	-.29	.006	.040	.742	.300	.680	.635	.498	.415	.364	.056
1923	-.56	.003	.034	.627	.092	.687	.446	.104	.367	.118	-.431
1924	-1.08	-.033	.030	.389	-.029	.482	.019	-.694	.234	-.236	-1.11
1925	-.41	.013	.025	-.350	-.062	.364	.013	-.722	.537	.192	-.434
1926	-1.13	.001	.036	.062	-.083	.442	-.103	-1.03	.357	-.190	-1.18
1927	-.27	-.030	.038	-.158	-.137	.546	.184	-.420	.560	.199	-.399
1928	-.26	-.069	.047	-.809	-.070	.240	-.222	-1.09	.681	.233	-.352
1929	+.23	-.050	.036	.369	.086	1.50	.788	.585	.882	.615	.302
1930	+.03	-.028	.043	.533	.052	1.00	.747	.578	.715	.454	.097
1931	-.27	-.020	.041	.306	.035	.807	.419	.057	.646	.254	-.214
1932	-.27	-.010	.043	-.779	.011	.050	-.283	-1.02	.520	.200	-.226
1933	+.22	-.014	.051	-.284	-.077	.662	.289	-.027	.780	.412	.180
1934	+.78	-.027	.043	1.24	-.132	1.58	1.46	2.04	.750	.616	.664
1935	+1.09	-.009	.051	2.24	-.093	2.33	2.28	3.37	.921	.838	1.04
1936	+1.35	.016	.065	1.50	-.033	1.94	1.96	2.93	1.01	1.01	1.40
1937	+.94	.049	.061	1.79	-.067	2.10	1.98	2.84	.985	.835	.983
1938	+1.18	.049	.046	2.21	-.371	2.28	2.35	3.48	.725	.755	.904
1939	+1.00	.061	.055	3.76	-.226	3.18	3.26	4.88	.802	.813	.890
1940	+2.68	.061	.039	5.44	.219	4.67	5.04	8.22	1.55	1.84	3.00
1941	+3.09	.142	.022	1.88	.718	2.62	3.19	5.13	1.93	2.48	3.97
1942	+1.08	.163	.027	.875	.445	.860	1.73	2.14	.601	1.46	1.71
1943	+.71	.112	.021	.397	.328	.345	1.24	1.24	.305	1.20	1.17
1944	+.83	.125	.057	-.736	.377	-.265	.648	.276	.405	1.34	1.39
1945	+.23	.144	.067	.331	.555	.202	.923	.772	.340	1.06	.996
1946	+.31	.154	.068	.732	.375	.746	.977	1.26	.532	.758	.907
1947	+1.09	.133	.050	2.24	.200	2.16	2.28	3.51	.941	1.03	1.47
1948	+.39	.225	.094	2.53	.659	2.02	2.36	3.24	.905	1.21	1.37
1949	+.45	.178	.081	1.70	.906	1.41	1.62	2.41	.928	1.12	1.61
1950	+.76	.307	.129	1.18	1.45	1.18	1.72	2.38	1.34	1.88	2.65
1951	+.05	.244	.120	.461	.953	.665	1.04	.875	.956	1.34	1.37
1952	+1.01	.252	.161	2.12	1.32	1.81	2.56	3.54	1.33	2.07	2.74
1953	+1.16	.262	.164	1.82	1.72	1.42	2.30	3.41	1.37	2.24	3.31
1954	+.61	.251	.185	1.75	1.66	1.26	2.01	2.80	1.20	1.95	2.71
1955	+.51	.277	.165	2.04	1.86	1.33	2.13	2.99	1.22	2.03	2.81
1956	-1.47	.282	.171	2.21	1.97	.827	1.23	1.19	.681	1.08	.953
1957	-.43	.240	.200	2.15	1.89	1.09	1.56	2.16	.933	1.40	1.90

EC-1, SOURCES

Computation of Index Weighted with 1954 Prices:

COL. A, Agriculture. Table AC-1, Col. I, transcribed.

COL. B, Forest products. Table FC-1, Col. G, transcribed.

COL. C, Fish. Table FC-12, Col. M, times $.25/lb.

COL. D, Minerals. Table MC-1, Col. G, times 1.07 (about $117 mil. omitted: *Minerals Yearbook 1954,* pp. 9-10).

COL. E, All minerals except gold and silver. Table MC-1, Col. J, times 1.07.

COLS. F and G, All extractive net imports, 1902 and 1929 prices. Computed exactly as Col. H, except that 1902- and 1929-weighted series from the source tables were used.

COL. H, All extractive net imports, 1954 prices. Sum of Cols. A through D.

COLS. I and J, Preferred series, all extractive (except gold and silver), net imports, 1902 and 1929 prices. Computed exactly as Col. K, except that 1902- and 1929-weighted columns were taken from each of the source tables.

COL. K, Preferred series, all extractive (except gold and silver), net imports, 1954 prices. Sum of Cols. A, B, C, and E.

EC-1, NOTES

* Less than $500,000.

COL. C. The price weight is higher than for fish output because most imports enter in processed form. This price gives a total for fish imports in 1954 which is equal to the value of net imports of all edible products. It does not include imports of nonedible products, on which only a value series, plus some fragmentary data on quantity, is available (cf. Table FC-12). The 1902 price weight used was $.05/lb.; for 1929, $.11/lb.

COL. D. The factor applied to the minerals net imports series is used to provide an allowance for commodities not accounted for directly in the source table, as was done for agricultural imports in the source table (AC-1). (However, though the factors were applied to net imports, they were computed as a percent of minerals having net imports, avoiding the offset of miñerals with net exports.) The factors applied to the minerals series for 1902- and 1929-weighted series were as follows: 1902-weighted net imports of minerals, 1.08 ($4.4 mil. omitted); 1929-weighted net imports of minerals, 1.11 ($23.5 mil. omitted).

EC-2. ALL EXTRACTIVE INDUSTRIES: Consumption

	Agriculture	Forest products	Fish	Minerals	Preferred series, all extractive ($ bil.)		
	(billion dollars, 1954 prices)				1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G
1870	6.40	(2.3)		.459	2.45	4.92	9.38
1871	7.04			.478	2.73	5.30	10.1
1872	7.30			.599	2.76	5.48	10.5
1873	6.78			.651	2.51	5.27	10.0
1874	6.91			.628	2.63	5.40	10.2
1875	7.17			.606	2.77	5.52	10.5
1876	7.30			.590	2.77	5.65	10.6
1877	8.06			.659	2.93	5.94	11.5
1878	7.94			.651	3.07	6.06	11.4
1879	8.06	(2.6)		.803	2.97	6.16	11.7
1880	8.32		.24	.942	3.15	6.46	12.1
1881	8.32		.22	.988	3.17	6.48	12.2
1882	9.34		.23	1.13	3.48	7.04	13.4
1883	9.73		.22	1.21	3.63	7.32	13.9
1884	10.5		.23	1.24	3.92	7.71	14.7
1885	10.4		.22	1.25	3.78	7.71	14.6
1886	10.2		.21	1.38	3.96	7.78	14.6
1887	10.2		.21	1.57	3.88	7.74	14.8
1888	10.8		.23	1.77	4.21	8.32	15.7
1889	11.1	(2.9)	.27	1.76	4.22	8.45	16.0
1890	10.9		.26	1.96	4.27	8.42	16.1
1891	13.2		.25	2.06	4.97	9.56	18.5
1892	10.9		.24	2.15	4.31	8.54	16.3
1893	10.8		.24	2.06	4.29	8.52	16.2
1894	11.5		.24	1.91	4.38	8.72	16.8
1895	12.0		.22	2.24	4.61	9.47	17.7
1896	12.5		.23	2.16	4.74	9.69	18.1
1897	12.2		.23	2.22	4.76	9.38	17.9
1898	12.9		.25	2.40	4.96	9.98	18.9
1899	13.1	(3.4)	.27	2.75	5.19	10.3	19.5
1900	13.2	3.48	.28	2.83	5.22	10.6	19.8
1901	13.7	3.56	.30	3.08	5.43	10.0	20.6
1902	14.3	3.68	.31	3.22	5.63	11.3	21.5
1903	15.1	3.70	.30	3.76	5.89	12.1	22.9
1904	15.6	3.76	.30	3.69	6.29	12.4	23.3
1905	15.5	3.79	.30	4.19	6.42	12.4	23.8
1906	16.4	3.98	.30	4.36	6.77	13.2	25.0
1907	15.9	4.06	.30	4.84	6.74	13.0	25.1
1908	16.5	3.83	.31	4.24	6.84	13.1	24.9
1909	17.2	3.99	.31	4.90	7.18	13.8	26.4
1910	17.2	4.01	.32	5.32	7.17	14.0	26.8
1911	17.3	3.90	.33	5.21	7.26	14.2	26.7
1912	17.9	3.96	.34	5.59	7.65	14.6	27.8
1913	17.4	3.90	.36	5.96	7.59	14.4	27.6
1914	18.7	3.77	.40	5.39	7.70	14.8	28.3
1915	20.1	3.62	.36	5.86	7.93	15.0	29.9
1916	18.3	3.81	.36	6.65	8.04	15.0	29.1
1917	19.5	3.60	.36	7.02	8.37	15.6	30.5
1918	19.2	3.43	.36	7.24	8.54	15.7	30.2
1919	19.2	3.54	.39	6.29	8.49	15.4	29.4
1920	19.5	3.55	.40	7.32	8.61	16.0	30.8
1921	17.9	3.16	.37	6.04	7.94	14.4	27.5
1922	21.4	3.45	.40	6.82	9.32	16.8	32.1
1923	21.5	3.72	.39	8.58	9.79	17.7	34.2
1924	21.2	3.60	.41	8.09	9.53	17.3	33.3
1925	22.4	3.62	.41	8.36	10.2	18.1	34.8
1926	22.3	3.55	.44	8.83	10.3	18.3	35.1
1927	23.3	3.41	.47	8.91	10.7	18.8	36.1
1928	23.6	3.35	.47	9.05	10.9	19.0	36.5
1929	23.9	3.49	.46	9.78	11.3	19.5	37.6
1930	23.7	3.02	.40	8.45	10.7	18.8	35.6
1931	23.6	2.50	.36	7.06	10.1	17.7	33.5
1932	22.8	2.20	.34	5.82	9.49	16.7	31.2
1933	24.6	2.43	.35	6.35	10.4	18.0	33.7
1934	24.2	2.49	.38	6.60	10.1	18.2	33.7
1935	21.6	2.71	.43	7.16	9.51	17.1	31.9
1936	25.7	3.03	.49	8.45	11.2	19.9	37.7
1937	23.9	3.11	.44	9.28	10.9	19.1	36.7
1938	24.6	2.86	.46	7.69	10.6	18.7	35.6
1939	26.4	3.13	.45	8.83	11.4	20.4	38.8
1940	27.9	3.24	.45	10.3	12.5	21.8	41.9
1941	29.3	3.64	.47	11.9	13.7	23.6	45.3
1942	30.0	3.52	.43	12.2	12.8	24.2	46.1
1943	32.6	3.30	.37	12.7	13.8	26.2	49.0
1944	31.9	3.25	.42	13.2	13.7	25.8	48.8
1945	31.1	2.98	.52	13.0	13.5	25.4	47.6
1946	31.4	3.32	.48	12.9	14.0	25.4	48.1
1947	33.3	3.42	.47	13.8	14.9	26.5	51.0
1948	29.8	3.60	.50	14.7	14.2	25.3	48.6
1949	31.1	3.27	.51	13.5	14.2	25.4	48.4
1950	31.6	3.75	.56	15.2	15.3	27.2	51.1
1951	32.5	3.63	.55	16.1	15.5	27.9	52.8
1952	33.3	3.62	.55	16.2	15.9	28.3	53.7
1953	33.2	3.70	.58	16.9	16.0	28.7	54.4
1954	32.9	3.69	.58	16.3	15.7	28.7	53.5
1955	33.5	3.86	.55	18.0	16.2	29.7	55.9
1956	33.3	3.92	.55	18.9	16.5	30.4	56.7
1957	33.4	3.61	.55	18.8	16.4	30.3	56.4

EC-2, SOURCES

Computation of Index Weighted with 1954 Prices:

COL. A, Agriculture. Table AC-5, Col. J, times 1.28.

COL. B, Forest products. Table FC-2, Col. I, transcribed.

COL. C, Fish. Table FC-13, Col. G, times $.32/lb.

COL. D, Minerals. Table MC-2, Col. F, times 1.19.

COLS. E and F, Preferred series, all extractive consumption, 1902 and 1929 prices. Computed exactly as Col. G, except that 1902- and 1929-weighted series were used from each of the source tables.

COL. G, Preferred series, all extractive consumption, 1954 prices. Sum of Cols. A through D.

EC-2, NOTES

( ) Extrapolated figures.

COL. A. The factor applied to the agriculture series is an attempt to allow for commodities not covered by our source tables, and thus to bring agriculture into proper proportion to the other extractive sectors. 1954 figures for total output, as adjusted in Table EO-1, Col. A, plus total net imports (Table EC-1, Col. A) were divided by the 1954 agricultural consumption indicator (Table AC-5, Col. J) to arrive at this inflating factor. Similarly, adjusted 1902- and 1929-weighted figures for 1902 and 1929 outputs and net imports were compared with the 1902- and 1929-weighted consumption indicators, and the following factors derived for inflating the 1902- and 1929-weighted consumption series used for Cols. E and F of this table: 1902, 1.37; 1929, 1.20.

COL. C. The factor applied to the fish series is a "price" such as to give a value for 1954 equal to the value of the total catch (edible and nonedible, as given in Table EO-1, Col. C) plus the value of the edible imports (Table EC-1, Col. C). This value total is then varied over time exactly as the edible consumption series moves (Table FC-13, Col. G). The result is of course not precise, but it takes into account the great bulk of values in the consumption of fishery products. The price used for the 1902-weighted series (Col. E) was $.06/lb.; for the 1929 (Col. F), $.12/lb.

COL. D. The factor applied to the minerals series, to allow for commodities not covered by the source table, was derived by adding the adjusted output (as given in Table EO-1, Col. D) and the adjusted net imports (Table EC-1, Col. E) plus gold and silver from Table MC-13; this sum was then divided by total minerals consumption as given in Table MC-2, Col. F. The inflating factors used for Cols. E and F were: 1902, 1.08; 1929, 1.02.

EL-1. ALL EXTRACTIVE INDUSTRIES: Employment

(millions of persons)

	Agriculture	Forest products	Fishing	Mining	Preferred series, total
	A	B	C	D	E
1870	6.291	.028	(.080)	(.150)	6.55
1880	8.421	.048	(.120)	.286	8.88
1887			.136		
1888			.140		
1889			.160	.518	
1890	9.778	.105	.170	(.518)	10.57
1897			.177		
1900	10.47	.122	(.180)	(.75)	11.52
1902				.791	
1908			.161		
1909				1.041	
1910	11.10	.150	(.17)	(1.04)	12.46
1911	11.08				
1912	11.10				
1913	11.11				
1914	11.12				
1915	11.13				
1916	11.16				
1917	11.11				
1918	10.96				
1919	10.84		(.120)	1.131	12.28
1920	11.00	.191	(.120)	1.150	12.46
1921	10.97		(.120)	1.141	12.41
1922	10.92		(.110)	1.194	12.41
1923	10.78		(.110)	1.257	12.32
1924	10.67		(.120)	1.167	12.12
1925	10.67		(.120)	1.128	12.08
1926	10.62		(.120)	1.148	12.05
1927	10.35		.125	1.143	11.77
1928	10.39		.124	1.047	11.71
1929	10.45		.124	1.022	11.75
1930	10.34	.151	.120	.977	11.59
1931	10.29		.120	.858	11.41
1932	10.17		.113	.738	11.16
1933	10.09		.117	.756	11.11
1934	9.900		.123	.851	11.03
1935	10.11		.126	.884	11.28
1936	10.00		.128	.930	11.21
1937	9.820		.130	.979	11.09
1938	9.690		.130	.904	10.88
1939	9.610		.131	.893	10.79
1940	9.540	.164	.125	.932	10.76
1941	9.100		.119	.975	10.36
1942	9.250		.110	.950	10.47
1943	9.080		.118	.869	10.24
1944	8.950		.122	.838	10.08
1945	8.580		.144	.814	9.71
1946	8.320		.152	.861	9.50
1947	8.266		.159	.917	9.52
1948	7.973		.161	.959	9.27
1949	8.026		.161	.936	9.31
1950	7.507	.171	.161	.923	8.76
1951	7.054		.159	.906	8.28
1952	6.805		.152	.878	8.00
1953	6.562		.153	.845	7.72
1954	6.504		.145	.766	7.57
1955	6.730		.144	.769	7.81
1956	6.585		.142	.793	7.69
1957	6.229	.159	.138	.801	7.33

EL-1, SOURCES

Col. A, Agriculture. Table AL-1, Col. H, transcribed.
Col. B, Forest products. Table FL-1, Col. I, transcribed.
Col. C, Fishing. Table FL-5, Col. K, transcribed.
Col. D, Mining. Table ML-1, Col. F, transcribed.
Col. E, Preferred series, all extractive employment. Sum, Cols. A through D.

EL-1, NOTES

( ) Rough estimate (see source tables).

We have made no allowance for some sectors of employment, such as pulpwood, naval stores, and fuelwood because of lack of data. Fishing and agriculture also present formidable problems: see the source tables.

EL-2. ALL EXTRACTIVE INDUSTRIES: Employment/Output Ratio

	Employment (millions)	Output, 1954 prices ($ bil.)	Preferred series, employment/output (men per $ mil.)		
			Output in 1902 prices	Output in 1929 prices	Output in 1954 prices
	A	B	C	D	E
1870	6.55	10.3	2480	1210	640
1871		10.4			
1872		11.2			
1873		11.2			
1874		11.1			
1875		11.7			
1876		11.9			
1877		13.1			
1878		13.5			
1879		14.1			
1880	8.88	14.5	2360	1140	610
1881		13.9			
1882		15.3			
1883		15.3			
1884		16.4			
1885		16.2			
1886		16.3			
1887		16.5			
1888		17.2			
1889		17.9			
1890	10.57	18.0	2290	1110	590
1891		20.6			
1892		17.6			
1893		17.6			
1894		18.6			
1895		19.2			
1896		20.5			
1897		21.5			
1898		22.5			
1899		22.6			
1900	11.52	23.1	1940	940	500
1901		23.2			
1902		23.6			
1903		24.4			
1904		25.3			
1905		25.5			
1906		27.0			
1907		27.0			
1908		26.7			
1909		26.8			
1910	12.46	27.5	1750	860	450
1911		28.7			
1912		29.5			
1913		29.7			
1914		30.5			
1915		30.1			
1916		30.2			
1917		30.4			
1918		31.7			
1919	12.28	30.1	1560	782	408
1920	12.46	31.5	1520	764	396
1921	12.41	28.1	1660	833	442
1922	12.41	30.7	1520	766	404
1923	12.32	33.7	1400	708	366
1924	12.12	33.6	1370	689	361
1925	12.08	33.8	1380	686	357
1926	12.05	35.7	1300	651	338
1927	11.77	34.7	1280	654	339
1928	11.71	35.8	1220	626	327
1929	11.75	36.4	1230	625	323
1930	11.59	34.9	1240	630	332
1931	11.41	34.6	1220	623	330
1932	11.16	31.1	1300	664	359
1933	11.11	31.6	1310	654	352
1934	11.03	29.3	1400	698	376
1935	11.28	30.9	1360	680	365
1936	11.21	33.0	1280	644	340
1937	11.09	37.8	1100	560	293
1938	10.88	34.9	1150	585	312
1939	10.79	36.9	1090	551	292
1940	10.76	38.4	1050	530	280
1941	10.36	40.3	959	489	257
1942	10.47	43.8	895	451	239
1943	10.24	44.3	860	434	231
1944	10.08	45.7	820	417	221
1945	9.71	43.4	816	419	224
1946	9.50	44.5	792	399	213
1947	9.52	46.1	768	393	206
1948	9.27	48.6	702	362	191
1949	9.31	46.1	739	378	202
1950	8.76	47.1	684	349	186
1951	8.28	49.9	613	315	166
1952	8.00	51.2	571	292	156
1953	7.72	51.5	548	281	150
1954	7.57	50.5	549	276	150
1955	7.81	53.0	546	274	147
1956	7.69	54.7	516	260	141
1957	7.33	52.9	506	255	139

EL-2, SOURCES

COL. A, Employment. Table EL-1, Col. E, transcribed.

COL. B, Output in 1954 prices. Table EO-1, Col. G, transcribed.

COLS. C and D, Preferred series, employment/output ratio, output in 1902 and 1929 prices. Computed as Col. E, except that 1902- and 1929-weighted output series were used (Table EO-1, Cols. E and F).

COL. E, Preferred series, employment/output ratio, output in 1954 prices. Col. A/Col. B.

AGRICULTURE (A)

Agriculture: Price (AP)

AP-1. AGRICULTURE: Price

	Crops	Feed grain & forage	Corn	Livestock	Preferred series, agriculture, price indicators ($ bil.)		
	(billion dollars, 1954 weights)				1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G
1870	8.06	4.31	.252	6.91	4.96	7.42	10.92
1871	8.18	4.25	.224	5.76	4.59	6.74	9.91
1872	7.49	3.73	.185	5.60	4.36	6.48	9.55
1873	7.92	4.14	.234	5.74	4.46	6.62	9.75
1874	8.66	4.83	.310	5.88	4.55	6.79	10.01
1875	7.03	3.69	.202	5.94	4.33	6.45	9.48
1876	6.41	3.08	.175	5.44	4.08	5.99	8.95
1877	5.95	2.84	.173	4.83	3.75	5.44	8.12
1878	5.12	2.44	.151	4.01	3.13	4.58	6.84
1879	6.23	3.00	.176	3.96	3.42	4.95	7.36
1880	6.55	3.39	.189	4.85	3.78	5.58	8.21
1881	8.38	4.46	.303	5.28	4.38	6.38	9.50
1882	6.72	3.52	.233	5.82	4.19	6.24	9.25
1883	6.16	3.09	.202	5.55	3.98	5.90	8.83
1884	5.41	2.75	.169	5.40	3.63	5.44	8.23
1885	5.53	2.82	.156	4.52	3.31	4.88	7.38
1886	5.35	2.80	.173	4.28	3.16	4.66	7.01
1887	5.90	3.18	.205	4.54	3.39	5.02	7.46
1888	5.58	2.76	.160	4.70	3.51	5.21	7.67
1889	4.81	2.26	.133	4.25	3.15	4.70	6.93
1890	6.50	3.43	.240	4.20	3.46	5.00	7.52
1891	5.57	2.95	.192	4.53	3.25	4.87	7.34
1892	5.52	2.94	.190	4.60	3.32	4.98	7.38
1893	5.15	2.84	.175	5.13	3.39	5.13	7.62
1894	5.20	3.16	.218	4.42	2.90	4.34	6.67
1895	4.40	2.31	.122	4.17	2.82	4.24	6.38
1896	4.11	1.94	.103	3.76	2.70	4.02	6.04
1897	4.53	2.11	.126	3.89	2.94	4.27	6.44
1898	4.29	2.20	.138	4.01	2.80	4.09	6.23
1899	4.63	2.42	.144	4.29	2.95	4.36	6.65
1900	5.26	2.78	.169	4.62	3.27	4.84	7.26
1901	6.51	3.88	.290	4.83	3.48	5.07	7.75
1902	5.40	2.98	.194	5.48	3.58	5.38	8.09
1903	5.86	3.10	.202	5.15	3.66	5.46	8.11
1904	5.93	3.06	.211	4.95	3.61	5.36	8.02
1905	5.75	2.89	.197	5.19	3.75	5.60	8.25
1906	5.79	3.09	.189	5.37	3.72	5.58	8.26
1907	7.10	3.90	.244	5.62	4.10	6.09	9.06
1908	7.23	3.97	.289	5.62	4.10	6.08	9.16
1909	7.48	3.87	.263	6.28	4.64	6.91	10.17
1910	7.25	3.63	.217	6.95	4.94	7.37	10.79
1911	8.10	4.69	.297	6.16	4.42	6.53	9.87
1912	6.91	3.57	.234	6.72	4.55	6.86	10.30
1913	7.73	4.20	.301	7.16	4.93	7.32	10.99
1914	7.35	4.24	.308	7.31	4.70	6.99	10.73
1915	7.61	3.99	.298	6.95	4.85	7.17	10.86
1916	11.43	5.96	.516	7.94	6.50	9.36	13.92
1917	15.82	7.96	.635	11.10	9.12	13.27	19.59
1918	16.33	8.31	.663	13.21	10.15	14.92	21.90
1919	18.14	8.61	.658	14.18	11.35	16.67	24.37
1920	10.49	4.79	.247	13.35	8.52	13.04	19.30
1921	8.44	3.44	.212	9.09	6.26	9.56	14.30
1922	9.49	4.32	.314	8.79	6.35	9.66	14.27
1923	10.41	4.79	.347	9.10	6.83	10.40	15.07
1924	11.46	5.71	.466	8.86	6.70	10.04	15.07
1925	10.38	4.39	.299	10.24	7.49	11.20	16.54
1926	9.47	4.58	.327	10.50	6.85	10.41	15.71
1927	10.17	4.74	.367	10.15	7.13	10.71	15.95
1928	9.28	4.66	.365	10.73	6.84	10.35	15.71
1929	9.65	4.53	.349	11.00	7.21	10.81	16.47
1930	6.98	3.67	.251	9.26	5.51	8.43	12.82
1931	4.32	2.36	.134	6.91	3.73	5.86	9.00
1932	3.92	1.96	.133	5.07	3.03	4.69	7.17
1933	6.29	3.17	.226	4.86	3.74	5.54	8.21
1934	8.68	5.09	.367	5.72	4.39	6.56	9.67
1935	6.78	3.42	.289	7.92	5.16	7.81	11.57
1936	9.84	5.55	.471	8.13	5.93	8.75	12.89
1937	6.47	3.23	.224	8.64	5.40	8.19	12.10
1938	5.50	2.76	.214	7.72	4.70	7.14	10.68
1939	6.17	3.26	.248	7.28	4.62	6.93	10.45
1940	6.36	3.36	.275	7.43	4.69	7.06	10.71
1941	8.90	4.20	.336	9.43	6.50	9.73	14.47
1942	10.72	5.07	.409	11.80	8.05	12.02	17.84
1943	13.15	6.67	.494	13.70	9.29	13.86	20.67
1944	13.35	6.56	.471	13.14	9.15	13.72	20.40
1945	14.24	7.10	.562	13.99	9.85	14.57	21.69
1946	17.04	8.60	.699	16.42	11.80	17.49	25.56
1947	20.44	11.13	.987	19.46	13.77	20.18	29.76
1948	16.19	7.75	.585	21.52	13.91	20.69	30.55
1949	14.95	7.17	.567	18.28	12.04	17.91	26.62
1950	17.31	8.26	.695	18.56	13.18	19.22	28.30
1951	18.49	9.23	.759	22.16	14.86	21.66	32.19
1952	18.24	8.97	.695	20.19	13.87	20.39	30.15
1953	16.82	8.19	.676	18.21	12.66	18.91	27.52
1954	16.73	7.97	.654	16.84	12.41	18.32	26.25
1955	15.85	7.47	.617	15.80	11.38	16.99	24.79
1956	15.94	7.50	.590	15.37	11.32	16.90	24.39
1957	14.71	6.49	.507	16.50	11.66	17.42	25.22

AP-1, SOURCES

1954 Output Weights:

COL. A, Crop prices. Table AP-2, Col. Z, transcribed.

COL. B, Feed grain and forage. Table AP-2, sum of Cols. D through I.

COL. C, Corn, other than feed and seed. Table AP-6, Col. G, times 457 (million bushels). (See notes to Table AO-1.)

COL. D, Livestock prices. Table AP-26, Col. L, transcribed.

COLS. E and F, Preferred series, 1902 and 1929 weights. Computed exactly as Col. G, except that 1902 and 1929 outputs were used as weights for each component. (For weights, see source tables AP-2 and AP-26.)

COL. G, Preferred series, 1954 weights. Col. A minus Col. B plus Col. C plus Col. D.

AP-1, NOTES

This is an output-weighted index, and it omits the "intermediate products," feed grains and hay, as well as imported farm commodities. A price index which avoids this "netting out" of the feed grains may be constructed by a simple addition of Cols. A and D of this table, or by other combinations which may occur to the reader.

AP-2. CROPS: Price

	Wheat	Rice	Rye	Corn	Oats	Barley	Sorghum for grain	Sorghum for forage	Hay	Potatoes	Tomatoes (fresh)	Tomatoes (for processing)	Lettuce
	A	B	C	D	E	F	G	H	I	J	K	L	M
1870	1.025	.151	.021	1.685	.601	.323			1.482	.259			
1871	1.227	.151	.020	1.501	.543	.292			1.699	.212			
1872	1.219	.182	.019	1.238	.454	.280			1.574	.219			
1873	1.149	.171	.020	1.563	.527	.365			1.477	.255			
1874	.933	.177	.022	2.073	.733	.365			1.421	.246			
1875	.994	.167	.020	1.355	.517	.324			1.308	.140			
1876	1.019	.148	.018	1.168	.492	.260			1.005	.241			
1877	1.068	.135	.016	1.156	.406	.240			.895	.163			
1878	.760	.135	.014	1.012	.338	.221			.750	.214			
1879	1.089	.133	.017	1.177	.460	.227			.987	.158			
1880	.937	.155	.019	1.263	.492	.251			1.212	.176			
1881	1.177	.146	.024	2.031	.642	.310			1.256	.334			
1882	.874	.146	.016	1.557	.523	.239			1.024	.199			
1883	.899	.124	.015	1.352	.457	.223			.899	.151			
1884	.635	.124	.014	1.128	.384	.183			.922	.140			
1885	.760	.127	.015	1.043	.393	.211			1.033	.161			
1886	.676	.111	.014	1.156	.407	.201			.895	.167			
1887	.670	.096	.014	1.373	.419	.197			1.035	.253			
1888	.912	.096	.015	1.070	.381	.224			.948	.143			
1889	.687	.107	.011	.890	.309	.157			.793	.131			
1890	.824	.117	.016	1.605	.588	.235			.832	.284			
1891	.818	.123	.020	1.287	.431	.198			.887	.132			
1892	.614	.110	.014	1.272	.444	.177			.900	.240			
1893	.525	.089	.013	1.168	.407	.152			.972	.216			
1894	.481	.103	.013	1.459	.451	.166			.921	.196			
1895	.497	.103	.011	.816	.272	.124			.987	.097			
1896	.709	.100	.010	.691	.258	.112			.779	.106			
1897	.796	.104	.011	.841	.296	.130			.740	.202			
1898	.570	.117	.011	.924	.354	.147			.668	.154			
1899	.579	.117	.013	.963	.345	.147			.841	.147			
1900	.611	.105	.013	1.131	.357	.154			1.003	.157			
1901	.621	.105	.014	1.942	.560	.172			1.013	.281			
1902	.620	.108	.013	1.297	.430	.172			.928	.173			
1903	.682	.110	.014	1.355	.475	.169			.941	.224			
1904	.911	.084	.018	1.410	.436	.156			.904	.166			
1905	.735	.082	.016	1.315	.406	.149			.871	.224			
1906	.649	.090	.015	1.266	.447	.158			1.066	.186			
1907	.852	.103	.019	1.633	.626	.252			1.190	.223			
1908	.907	.120	.019	1.933	.694	.215			.931	.276			
1909	.970	.120	.019	1.761	.603	.212			1.100	.208			
1910	.892	.100	.019	1.453	.502	.230			1.261	.215			
1911	.851	.103	.021	1.985	.633	.313			1.520	.345			
1912	.785	.120	.016	1.563	.475	.193			1.164	.204			
1913	.776	.126	.015	2.015	.544	.199			1.229	.250			
1914	.955	.127	.021	2.058	.619	.203			1.143	.205			
1915	.941	.119	.022	1.991	.540	.197	.105		1.110	.249			
1916	1.407	.141	.029	3.455	.687	.305	.249		1.197	.559			
1917	2.007	.274	.045	4.251	.988	.466	.380		1.779	.459			
1918	2.017	.256	.039	4.434	.966	.360	.352		2.102	.435	.053	.059	.067
1919	2.125	.350	.038	4.404	1.081	.470	.301		2.253	.709	.054	.050	.078
1920	1.791	.159	.038	1.651	.761	.322	.221		1.779	.459	.058	.053	.062
1921	1.014	.140	.022	1.419	.454	.182	.092		1.250	.415	.063	.031	.077
1922	.946	.141	.016	2.104	.527	.189	.205		1.250	.241	.071	.034	.077
1923	.908	.160	.015	2.324	.574	.207	.220		1.412	.339	.083	.037	.065
1924	1.220	.192	.024	3.119	.674	.281	.201		1.369	.251	.072	.042	.064
1925	1.407	.212	.020	2.000	.548	.233	.177		1.380	.624	.074	.040	.060
1926	1.191	.161	.021	2.186	.564	.219	.128		1.434	.481	.073	.040	.069
1927	1.161	.130	.021	2.459	.664	.261	.189		1.110	.373	.059	.039	.055
1928	.972	.130	.021	2.440	.574	.215	.161		1.218	.191	.059	.038	.069
1929	1.014	.143	.022	2.336	.589	.204	.175	.052	1.175	.482	.062	.041	.075
1930	.652	.112	.011	1.682	.454	.153	.130	.050	1.197	.334	.057	.041	.070
1931	.376	.069	.009	.899	.300	.124	.070	.031	.941	.168	.039	.032	.060
1932	.369	.060	.007	.893	.221	.084	.070	.022	.668	.139	.035	.027	.053
1933	.724	.111	.016	1.511	.472	.164	.119	.028	.872	.302	.039	.031	.053
1934	.826	.112	.019	2.453	.678	.260	.223	.055	1.423	.163	.043	.032	.057
1935	.814	.103	.010	1.933	.372	.144	.130	.032	.811	.217	.040	.032	.060
1936	1.004	.119	.021	3.150	.633	.296	.223	.044	1.203	.418	.047	.034	.060
1937	.944	.094	.017	1.498	.426	.205	.118	.037	.942	.194	.047	.035	.064
1938	.547	.091	.008	1.434	.336	.139	.092	.025	.731	.203	.038	.034	.062
1939	.675	.104	.011	1.657	.437	.153	.134	.030	.845	.255	.049	.033	.055
1940	.663	.116	.010	1.838	.427	.150	.112	.027	.803	.193	.043	.032	.060
1941	.924	.193	.013	2.250	.580	.200	.129	.027	1.010	.288	.057	.041	.072
1942	1.073	.232	.015	2.733	.688	.240	.183	.029	1.199	.417	.076	.053	.107
1943	1.328	.254	.025	3.303	1.018	.376	.268	.068	1.634	.468	.103	.071	.133
1944	1.387	.252	.028	3.150	1.000	.387	.215	.057	1.756	.538	.110	.073	.106
1945	1.466	.256	.035	3.761	.940	.387	.280	.063	1.667	.512	.119	.075	.121
1946	1.869	.321	.050	4.679	1.141	.515	.327	.076	1.863	.447	.103	.083	.106
1947	2.253	.383	.059	6.605	1.481	.644	.430	.090	1.880	.589	.114	.077	.132
1948	1.948	.313	.037	3.914	1.019	.436	.301	.083	1.994	.560	.116	.075	.126
1949	1.850	.263	.031	3.792	.924	.394	.263	.067	1.732	.468	.106	.065	.151
1950	1.968	.327	.034	4.648	1.114	.447	.247	.070	1.732	.336	.122	.068	.109
1951	2.076	.309	.039	5.076	1.158	.470	.310	.102	2.110	.597	.125	.085	.138
1952	2.056	.377	.045	4.648	1.104	.512	.369	.129	2.208	.714	.144	.079	.129
1953	2.007	.333	.033	4.526	1.043	.436	.308	.083	1.797	.292	.134	.074	.124
1954	2.086	.293	.031	4.373	1.003	.409	.296	.092	1.797	.476	.125	.066	.126
1955	1.958	.309	.027	4.128	.839	.348	.231	.081	1.847	.392	.128	.067	.135
1956	1.938	.312	.030	3.945	.970	.373	.270	.107	1.839	.443	.149	.069	.124
1957	1.899	.328	.028	3.394	.857	.333	.228	.068	1.560	.425	.142	.068	.133

	Apples	Oranges	Sugarcane	Sugar beets	Tobacco	Cotton	Cottonseed	Soybeans	Peanuts	Flaxseed	All crops		
											1902 weights	1929 weights	1954 weights
	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1870	.063		.072		.284				.099	.069	5.176	6.180	8.061
1871	.105		.068		.217				.101	.066	5.259	6.264	8.176
1872	.062		.065		.226				.086	.059	4.726	5.695	7.494
1873	.088		.061		.193				.080	.059	5.071	6.058	7.916
1874	.067		.058		.311		.116		.098	.064	5.571	6.617	8.660
1875	.077		.058		.204		.125		.081	.062	4.469	5.353	7.028
1876	.057		.058		.189	.665	.099		.069	.051	4.018	4.816	6.415
1877	.078		.059		.125	.584	.099		.059	.055	3.760	4.468	5.953
1878	.048		.052		.133	.559	.079		.059	.048	3.212	3.848	5.124
1879	.048		.047		.144	.704	.090		.049	.047	3.927	4.705	6.229
1880	.044		.052		.187	.673	.097		.050	.048	4.107	4.909	6.553
1881	.068		.052		.262	.730	.109		.055	.045	5.362	6.316	8.383
1882	.102		.049		.228	.625	.104		.073	.046	4.292	5.048	6.721
1883	.075		.047		.236	.625	.094		.080	.049	3.902	4.642	6.165
1884	.057		.037		.226	.630	.080		.064	.050	3.408	4.071	5.410
1885	.047		.036		.213	.575	.072		.040	.049	3.463	4.140	5.526
1886	.059		.034		.193	.552	.070		.044	.041	3.392	4.025	5.349
1887	.057		.033		.198	.586	.079		.040	.040	3.781	4.458	5.905
1888	.048		.036		.161	.582	.098		.046	.050	3.513	4.205	5.577
1889	.060		.041		.206	.586	.072		.059	.050	3.027	3.629	4.811
1890	.091		.034		.217	.588	.074		.057	.055	4.197	4.904	6.503
1891	.042		.025		.200	.496	.073		.038	.039	3.525	4.172	5.571
1892	.065		.021		.204	.571	.067		.034	.035	3.542	4.176	5.525
1893	.073		.023		.180	.480	.076		.034	.037	3.320	3.889	5.152
1894	.054		.020		.180	.314	.056		.027	.047	3.362	3.865	5.196
1895	.051		.021		.180	.522	.054		.030	.036	2.779	3.315	4.401
1896	.032		.023		.153	.456	.061		.034	.027	2.567	3.095	4.111
1897	.059		.023		.137	.458	.049		.028	.032	2.873	3.410	4.531
1898	.072		.026		.155	.393	.046		.029	.037	2.732	3.201	4.288
1899	.058		.028		.140	.478	.065		.034	.040	2.943	3.474	4.633
1900	.040		.029		.146	.627	.076		.031	.060	3.358	3.979	5.262
1901	.067		.025		.176	.482	.076		.029	.055	4.270	4.898	6.507
1902	.051		.022		.146	.521	.083		.034	.057	3.461	4.058	5.396
1903	.048		.023		.135	.719	.087		.036	.038	3.772	4.468	5.861
1904	.049		.025		.176	.615	.079		.046	.041	3.814	4.504	5.928
1905	.060		.027		.178	.738	.079		.040	.044	3.721	4.409	5.754
1906	.063		.023		.204	.656	.094		.039	.042	3.720	4.402	5.794
1907	.093		.024		.211	.710	.098		.044	.044	4.573	5.376	7.097
1908	.078		.026		.213	.617	.123		.037	.045	4.690	5.457	7.227
1909	.087	.139	.026	.071	.200	.926	.127		.041	.059	4.843	5.719	7.484
1910	.089	.159	.025	.077	.213	.956	.137		.040	.094	4.644	5.523	7.248
1911	.075	.167	.030	.078	.228	.661	.090		.042	.081	5.218	6.088	8.099
1912	.069	.196	.026	.082	.294	.788	.096		.045	.053	4.368	5.198	6.913
1913	.099	.136	.022	.080	.337	.854	.115		.045	.051	5.009	5.881	7.726
1914	.063	.147	.026	.077	.228	.503	.081		.042	.054	4.748	5.500	7.348
1915	.075	.198	.031	.080	.228	.769	.157		.041	.069	4.921	5.773	7.609
1916	.091	.180	.036	.086	.410	1.189	.238		.049	.095	7.492	8.767	11.431
1917	.123	.466	.049	.104	.610	1.855	.336		.071	.128	10.044	11.937	15.818
1918	.142	.379	.050	.141	.713	1.978	.341		.066	.147	10.539	12.465	16.335
1919	.198	.420	.096	.166	.934	2.421	.344		.094	.182	11.688	13.872	18.140
1920	.138	.250	.040	.164	.384	1.088	.134		.047	.096	6.561	7.892	10.494
1921	.182	.397	.025	.090	.528	1.165	.152		.038	.069	5.261	6.361	8.440
1922	.110	.263	.040	.112	.574	1.567	.159		.054	.086	5.959	7.241	9.487
1923	.122	.194	.049	.127	.449	1.965	.215		.065	.088	6.676	8.110	10.410
1924	.137	.385	.038	.112	.475	1.569	.174	.852	.058	.090	7.300	8.685	11.456
1925	.140	.359	.028	.090	.490	1.344	.165	.798	.043	.093	6.484	7.804	10.384
1926	.098	.340	.034	.107	.479	.856	.115	.682	.050	.084	5.935	7.052	9.467
1927	.164	.504	.032	.108	.475	1.384	.182	.614	.052	.080	6.476	7.740	10.175
1928	.121	.220	.026	.100	.494	1.232	.179	.634	.049	.080	5.967	7.106	9.276
1929	.154	.487	.026	.100	.417	1.149	.162	.634	.037	.116	6.111	7.240	9.652
1930	.114	.182	.023	.101	.299	.648	.115	.457	.035	.066	4.452	5.266	6.983
1931	.071	.165	.022	.084	.198	.388	.047	.164	.016	.048	2.752	3.286	4.321
1932	.068	.119	.021	.074	.262	.447	.054	.180	.015	.036	2.501	3.000	3.924
1933	.088	.188	.022	.072	.311	.697	.067	.313	.028	.067	4.090	4.829	6.295
1934	.098	.155	.016	.073	.539	.847	.173	.328	.033	.070	5.740	6.764	8.676
1935	.080	.204	.022	.081	.430	.760	.160	.243	.031	.059	4.450	5.280	6.780
1936	.115	.236	.025	.085	.563	.847	.175	.426	.037	.078	6.561	7.627	9.839
1937	.071	.112	.020	.074	.500	.576	.102	.285	.033	.077	4.166	4.976	6.471
1938	.091	.103	.019	.066	.458	.589	.114	.226	.033	.066	3.599	4.267	5.505
1939	.071	.128	.020	.067	.346	.623	.111	.273	.034	.060	4.034	4.769	6.171
1940	.089	.159	.020	.072	.359	.677	.113	.304	.034	.059	4.170	4.906	6.360
1941	.107	.211	.027	.091	.616	1.167	.249	.529	.047	.074	5.717	6.838	8.902
1942	.152	.333	.030	.096	.821	1.304	.238	.546	.061	.097	6.878	8.204	10.723
1943	.265	.356	.032	.124	.885	1.362	.272	.617	.072	.117	8.509	10.080	13.151
1944	.222	.363	.034	.149	.924	1.420	.276	.699	.081	.120	8.568	10.205	13.347
1945	.326	.396	.039	.144	.930	1.543	.267	.709	.083	.119	9.280	10.939	14.238
1946	.255	.209	.045	.157	1.046	2.236	.377	.876	.092	.166	11.253	13.331	17.039
1947	.199	.176	.049	.166	.982	2.187	.449	1.135	.102	.254	13.602	15.870	20.436
1948	.246	.235	.040	.149	1.046	2.081	.351	.774	.106	.236	10.608	12.625	16.186
1949	.153	.300	.043	.152	1.020	1.958	.227	.737	.105	.150	9.676	11.607	14.951
1950	.181	.266	.054	.158	1.145	2.745	.453	.842	.110	.138	11.410	13.707	17.314
1951	.193	.204	.044	.165	1.143	2.595	.362	.931	.105	.154	12.226	14.593	18.491
1952	.270	.232	.048	.169	1.085	2.369	.364	.928	.110	.154	11.924	14.268	18.243
1953	.285	.262	.050	.164	1.192	2.209	.276	.928	.112	.150	10.947	13.029	16.818
1954	.250	.258	.048	.152	1.147	2.302	.315	.839	.123	.126	10.971	13.127	16.733
1955	.216	.324	.045	.158	1.166	2.219	.233	.757	.119	.120	10.329	12.395	15.847
1956	.262	.278	.055	.168	1.173	2.175	.279	.743	.113	.123	10.381	12.479	15.938
1957	.206	.413	.048	.155	1.199	2.021	.267	.709	.104	.121	9.364	11.350	14.706

(Sources and Notes on next page)

AP-2. CROPS: Price (Continued)

AP-2, SOURCES

1954 Output Weights:

COL. A, Wheat. Table AP-3, Col. C, times 984 mil. bu.

COL. B, Rice. Table AP-4, Col. E, times 64.2 mil. bags.

COL. C, Rye. Table AP-5, Col. D, times 25.9 mil. bu. (*Ag. Stat. 1957*).

COL. D, Corn. Table AP-6, Col. G, times 3,058 mil. bu.

COL. E, Oats. Table AP-8, Col. A, times 1,410 mil. bu.

COL. F, Barley. Table AP-7, Col. A, times 379 mil. bu.

COL. G, Sorghum for grain. Table AP-9, Col. D, times 235 mil. bu. (*Ag. Stat. 1957*).

COL. H, Sorghum for forage. Table AP-9, Col. C, times 5.2 mil. tons (*Ag. Stat. 1957*).

COL. I, Hay. Table AP-10, Col. E, times 107.8 mil. tons.

COL. J, Potatoes. Table AP-11, Col. E, times 366 mil. bu.

COL. K, Tomatoes (fresh). Table AP-12, Col. F, times 35.8 mil. bu.: Table AO-13, Col. D, divided by .533 (to convert cwt. to bu.).

COL. L, Tomatoes (for processing). Table AP-12, Col. E, times 2.7 mil. tons.

COL. M, Lettuce. Table AP-13, Col. E, times 40.8 mil. crates: Table AO-14, Col. D, times 4.03/3.08, ratio of prices, cwt./crates.

COL. N, Apples. Table AP-15, Col. H, times 111 mil. bu. (*Ag. Stat. 1957*, p. 186).

COL. O, Oranges. Table AP-16, Col. A, times 135 mil. boxes (*Ag. Stat. 1957*, p. 203).

COL. P, Sugarcane. Table AP-17, Col. D, times 6.88 mil. tons (*Ag. Stat. 1957*, p. 97, cane for sugar).

COL. Q, Sugar beets. Table AP-18, Col. A, times 14.1 mil. tons (*Ag. Stat. 1957*, p. 93).

COL. R. Tobacco. Table AP-19, Col. Q, times 2,148 mil. lb.: farm value (*Ag. Stat. 1957*, p. 122) divided by AP-19 price for 1954.

COL. S, Cotton. Table AP-20, Col. G, times 6,850 mil. lb.

COL. T, Cottonseed. Table AP-22, Col. E, times 5.23 mil. tons (sales to oil mills) (*Ag. Stat. 1957*, p. 139).

COL. U, Soybeans. Table AP-23, Col. A, times 341 mil. bu. (*Ag. Stat. 1957*, p. 159).

COL. V, Peanuts. Table AP-24, Col. E, times 1,008 mil. lb. (*Ag. Stat. 1957*, p. 151).

COL. W, Flaxseed. Table AP-25, Col. D, times 41.3 mil. bu. (*Ag. Stat. 1957*, p. 144).

COLS. X and Y, Price indicators, 1902 and 1929 output weights. Computed exactly as Col. Z, except that 1902 and 1929 outputs were used as weights in the computation. (For weights, see notes, below.)

COL. Z, Price indicator, all crops (1954 output weights). Sum. Cols. A-W, linked for missing series.

AP-2, NOTES

Where not otherwise indicated, the quantities used for weighting are taken from our tables on output (AO-1 *et seq.*). In some cases, the units are different in the price and output tables, and a conversion has been made.

The 1954 values are thus farm price multiplied by total output from farms. Where convenient data were available, we have used as weight the "final product" of each commodity, including the amounts of each crop consumed on the farm but excluding amounts used for seed. We have *not* excluded amounts used as animal feed. Grains and hay fed to animals are intermediate products for farming as a whole, but final products for the crop sector of farming. Crops fed to animals without harvesting, such as peanuts "hogged," are excluded, as is generally done in the U. S. Department of Agriculture data.

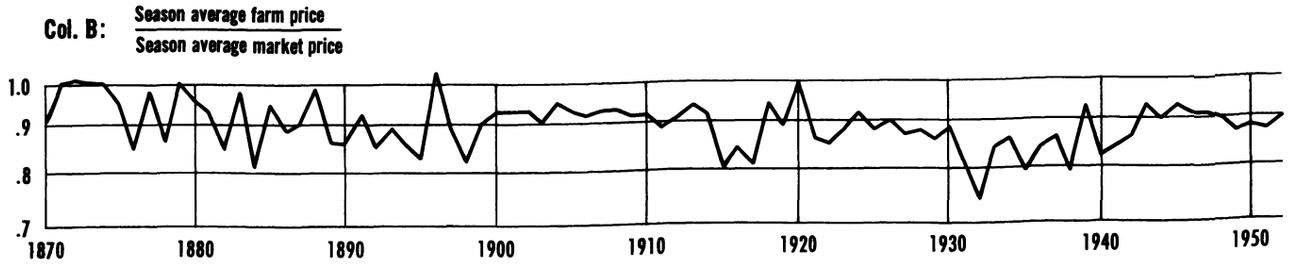
In the case of tobacco, the weight is farm value divided by our price index, as this index is adjusted and does not represent the average realization by farmers on tobacco sold.

In the case of peanuts the 1954 output was atypical; the 1951-57 average output was 1,456 million pounds.

COLS. X and Y. The weights used in the computation of the 1902- and 1929-weighted output indicators are as follows:

	Commodity	*1902 output weights*	*1929 output weights*
A	Wheat	687 mil. bu.	824 mil. bu.
B	Rice	9.1 mil. cwt.	17.8 mil. cwt.
C	Rye	33.9 mil. bu.	35.4 mil. bu.
D	Corn	2,620 mil. bu.	2,630 mil. bu.
E	Oats	1,077 mil. bu.	1,113 mil. bu.
F	Barley	146 mil. bu.	281 mil. bu.
G	Sorghum: grain	n. a.	50.0 mil. bu.
H	Sorghum: forage	n. a.	6.7 mil. bu.
I	Hay	77.0 mil. tons	87.4 mil. tons
J	Potatoes	297 mil. bu.	333 mil. bu.
K	Tomatoes: fresh	n. a.	20.3 mil. bu.
L	Tomatoes: for processing	n. a.	1.535 mil. tons
M	Lettuce	n. a.	20.0 mil. crates
N	Apples	168 mil. bu.	110 mil. bu.
O	Oranges	10 mil. boxes	31.8 mil. boxes
P	Sugarcane	5.38 mil. tons	3.12 mil. tons
Q	Sugar beets	1.8 mil. tons	7.31 mil. tons
R	Tobacco	968 mil. lb.	1,448 mil. lb.
S	Cotton	5,315 mil. lb.	7,410 mil. lb.
T	Cottonseed	3.27 mil. tons	5.02 mil. tons
U	Soybeans	n. a.	9.4 mil. bu.
V	Peanuts	230 mil. lb.	898 mil. lb.
W	Flaxseed	36.08 mil. bu.	15.92 mil. bu.

AP-3, NOTES



AP-3. WHEAT: Price

	Market price, Kansas City, year beg. July 1 (¢ per bu.)	Col. C / Col. A	Preferred series, season average price received by farmers ($ per bu.)
	A	B	C
1870	115	.91	1.042
1871	124	1.01	1.247
1872	121	1.02	1.239
1873	116	1.01	1.168
1874	95	1.00	.948
1875	106	.95	1.010
1876	122	.85	1.036
1877	111	.98	1.085
1878	90	.86	.772
1879	110	1.01	1.107
1880	99	.96	.952
1881	129	.93	1.196
1882	105	.85	.888
1883	93	.98	.914
1884	80	.81	.645
1885	81	.95	.772
1886	77	.89	.687
1887	75	.91	.681
1888	95	.98	.927
1889	81	.86	.698
1890	97	.86	.837
1891	89	.93	.831
1892	73	.85	.624
1893	60	.89	.534
1894	57	.86	.489
1895	61	.83	.505
1896	70	1.03	.721
1897	91	.89	.809
1898	71	.82	.579
1899	65	.90	.588
1900	67	.93	.621
1901	68	.93	.631
1902	68	.93	.630
1903	77	.90	.693
1904	97	.95	.926
1905	80	.93	.747
1906	72	.92	.660
1907	93	.93	.866
1908	99	.93	.922
1909	107	.92	.986
1910	98	.92	.906
1911	97	.89	.865
1912	88	.91	.798
1913	84	.94	.789
1914	105	.92	.971
1915	119	.80	.956
1916	171	.84	1.43
1917	252	.81	2.04
1918	219	.94	2.05
1919	242	.89	2.16
1920	183	1.00	1.82
1921	120	.86	1.03
1922	113	.85	.961
1923	105	.88	.923
1924	135	.92	1.24
1925	163	.88	1.43
1926	135	.90	1.21
1927	135	.87	1.18
1928	112	.88	.988
1929	120	.86	1.03
1930	76	.87	.663
1931	47	.81	.382
1932	51	.74	.375
1933	88	.84	.736
1934	98	.86	.839
1935	105	.79	.827
1936	121	.84	1.02
1937	111	.86	.959
1938	70	.79	.556
1939	74	.93	.686
1940	82	.82	.674
1941	112	.84	.939
1942	126	.86	1.09
1943	145	.93	1.35
1944	156	.90	1.41
1945	160	.93	1.49
1946	209	.91	1.90
1947	252	.91	2.29
1948	219	.90	1.98
1949	216	.87	1.88
1950	228	.88	2.00
1951	243	.87	2.11
1952	232	.90	2.09
1953	227	.90	2.04
1954	237	.90	2.12
1955	218	.91	1.99
1956	221	.89	1.97
1957	215	.90	1.93

AP-3, SOURCES

Col. A

1870-1955. *Ag. Stat. 1952,* Table 1, and *Ag. Stat. 1956,* Table 1, average price, year beginning July, at Kansas City.

1956-57. Supplement for 1958 to Agricultural Marketing Service Statistical Bulletin 159, p. 36.

Col. B, Ratio, Col. C/Col. A.

Col. C, Preferred series

1870-1908. *Ag. Stat. 1952,* Table 1, season average price received by farmers.

1909-54. AMS Stat. Bull. 180, Table 1, season average price received by farmers.

1955-57. AMS Stat. Bull. 159, Supplement for 1959, p. 36.

AP-3, NOTES

Col. A. For 1870-98, the series represents price for spring wheat at Chicago, for 1899-46, No. 2 hard winter at Kansas City, and for 1947-57, No. 2 hard and dark hard winter at Kansas City.

Col. B. The ratio of the farm price to the market price is shown in the chart on the facing page.

Col. C. The series from *Agricultural Statistics* actually refers to prices received by farmers on or about December 1 of each year. The AMS Bulletin 180 series "refers to crop of designated year, computed by weighting State season average prices by quantities sold. Marketing season begins in June in most Southern and Southwestern States, Missouri and Kansas, and in July in other states. Twelve-month period of heaviest marketing is June-May. Includes allowance for unredeemed loan and purchase agreement deliveries by States, 1938-45 and 1947-55."

These series have been compared with a number of the Bureau of Labor Statistics series for specific grades and types of wheat at given markets. No appreciable differences in trend were apparent; in most cases, the series moved in very close parallel throughout their course.

AP-4. RICE: Price

	Strauss & Bean ($ per bu.)	Strauss & Bean, Col. A x 2.23 ($ per cwt.)	AMS ($ per cwt.)	Col. C / Col. B	Preferred series, farm price ($ per cwt.)
	A	B	C	D	E
1870	1.06	2.36			2.36
1871	1.06	2.36			2.36
1872	1.28	2.84			2.84
1873	1.20	2.67			2.67
1874	1.24	2.76			2.76
1875	1.17	2.60			2.60
1876	1.04	2.31			2.31
1877	.95	2.11			2.11
1878	.95	2.11			2.11
1879	.93	2.07			2.07
1880	1.09	2.42			2.42
1881	1.02	2.27			2.27
1882	1.02	2.27			2.27
1883	.87	1.93			1.93
1884	.87	1.93			1.93
1885	.89	1.98			1.98
1886	.78	1.73			1.73
1887	.67	1.49			1.49
1888	.67	1.49			1.49
1889	.75	1.67			1.67
1890	.82	1.82			1.82
1891	.86	1.91			1.91
1892	.77	1.71			1.71
1893	.62	1.38			1.38
1894	.72	1.60			1.60
1895	.72	1.60			1.60
1896	.70	1.56			1.56
1897	.73	1.62			1.62
1898	.82	1.82			1.82
1899	.82	1.82			1.82
1900	.74	1.64			1.64
1901	.74	1.64			1.64
1902	.76	1.69			1.69
1903	.77	1.71			1.71
1904	.59	1.31			1.31
1905	.57	1.27			1.27
1906	.63	1.40			1.40
1907	.72	1.60			1.60
1908	.84	1.87			1.87
1909	.84	1.87	1.76	.941	1.87
1910	.70	1.56	1.47	.942	1.56
1911	.72	1.60	1.75	1.09	1.60
1912	.84	1.87	1.98	1.06	1.87
1913	.88	1.96	1.98	1.01	1.96
1914	.88	1.96	1.98	1.01	1.98
1915	.84	1.87	1.86	.995	1.86
1916	.91	2.02	2.19	1.08	2.19
1917	1.49	3.31	4.27	1.29	4.27
1918	1.79	3.98	3.99	1.00	3.99
1919	2.20	4.89	5.45	1.11	5.45
1920	1.61	3.58	2.48	.693	2.48
1921	1.04	2.31	2.18	.944	2.18
1922	.96	2.13	2.19	1.03	2.19
1923	1.02	2.27	2.49	1.10	2.49
1924	1.22	2.71	2.99	1.10	2.99
1925	1.42	3.16	3.30	1.04	3.30
1926	1.24	2.76	2.51	.909	2.51
1927	.99	2.20	2.02	.918	2.02
1928	.93	2.07	2.02	.976	2.02
1929	.97	2.16	2.22	1.03	2.22
1930	.86	1.91	1.74	.911	1.74
1931	.62	1.38	1.08	.783	1.08
1932	.47	1.04	.930	.894	.930
1933	.63	1.40	1.73	1.24	1.73
1934	.81	1.80	1.75	.972	1.75
1935	.75	1.67	1.60	.958	1.60
1936	.82	1.82	1.85	1.02	1.85
1937	.75	1.67	1.46	.874	1.46
1938			1.42		1.42
1939			1.62		1.62
1940			1.80		1.80
1941			3.01		3.01
1942			3.61		3.61
1943			3.96		3.96
1944			3.93		3.93
1945			3.98		3.98
1946			5.00		5.00
1947			5.97		5.97
1948			4.88		4.88
1949			4.10		4.10
1950			5.09		5.09
1951			4.82		4.82
1952			5.87		5.87
1953			5.19		5.19
1954			4.57		4.57
1955			4.81		4.81
1956			4.86		4.86
1957			5.11		5.11

AP-4, SOURCES

COL. A, Strauss & Bean, p. 71, estimated farm price per bushel, calendar year.

COL. B, Col. A converted to price per cwt. by dividing by .45 (1 bu. = 45 lb).

COL. C

1909-50. AMS Stat. Bull. 180, p. 5, farm price, season average.

1951-57. AMS Stat. Bull. 159, supplement for 1959, p. 38.

COL. D, Ratio, Col. C/Col. B.

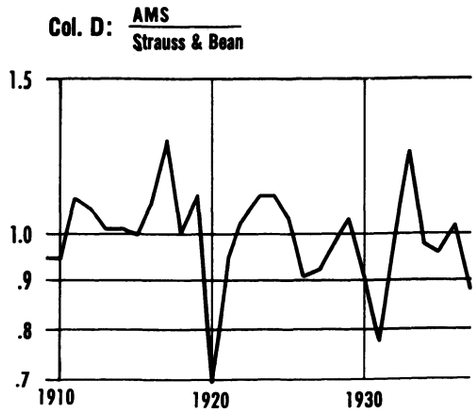
COL. E, Preferred series

1870-1913. Col. B, transcribed.

1914-57. Col. C, transcribed.

AP-4, NOTES

Prior to 1909 Strauss and Bean derived a farm price by converting the New York wholesale price per cwt. to price per bushel and multiplying by 30% to reduce it to the level of a Bureau of Agricultural Economics farm price for calendar years (see Strauss & Bean, p. 69). No other consistent series is available for the period prior to 1909 and no calendar year series is available for the period following 1937. An approximation of the trend of the price of rice can be derived by carrying forward from Col. B to Col. C at 1913, a year in which the crop year average price was nearly the same as both 1913 and 1914 calendar year prices.



AP-5. RYE: Price

	Strauss & Bean (¢ per bu.)	AMS ($ per bu.)	Col. B / Col. A	Preferred series, farm prices ($ per bu.)
	A	B	C	D
1870	80.5			.805
1871	76.7			.767
1872	74.4			.744
1873	75.7			.757
1874	85.6			.856
1875	75.9			.759
1876	68.0			.680
1877	60.6			.606
1878	54.5			.545
1879	67.4			.674
1880	74.5			.745
1881	91.7			.917
1882	63.1			.631
1883	58.4			.584
1884	53.4			.534
1885	58.0			.580
1886	53.0			.530
1887	53.5			.535
1888	59.2			.592
1889	42.0			.420
1890	62.3			.623
1891	77.2			.772
1892	53.7			.537
1893	49.6			.496
1894	48.8			.488
1895	40.7			.407
1896	36.9			.369
1897	42.6			.426
1898	44.1			.441
1899	49.5			.495
1900	50.1			.501
1901	55.0			.550
1902	50.0			.500
1903	53.5			.535
1904	69.2			.692
1905	60.3			.603
1906	58.5			.585
1907	72.6			.726
1908	72.8			.728
1909	73.0	.718	.984	.718
1910	72.9	.725	.994	.725
1911	80.7	.806	.999	.806
1912	65.0	.633	.974	.633
1913	61.2	.594	.970	.594
1914	82.3	.812	.987	.812
1915	84.0	.836	.995	.836
1916	112.4	1.12	.996	1.12
1917	173.4	1.73	.998	1.73
1918	149.6	1.49	.996	1.49
1919	145.9	1.45	.994	1.45
1920	146.4	1.46	.997	1.46
1921	84.0	.834	.993	.834
1922	63.9	.627	.981	.627
1923	59.3	.580	.978	.580
1924	95.3	.945	.992	.945
1925	79.0	.775	.981	.775
1926	83.0	.825	.994	.825
1927	83.5	.824	.987	.824
1928	83.6	.816	.976	.816
1929	85.7	.844	.985	.844
1930	44.5	.433	.973	.433
1931	34.1	.339	.994	.339
1932	28.1	.269	.957	.269
1933	62.7	.623	.994	.623
1934	71.8	.720	1.00	.720
1935	39.5	.383	.970	.383
1936	80.9	.808	.999	.808
1937	68.8	.672	.977	.672
1938		.322		.322
1939		.426		.426
1940		.399		.399
1941		.520		.520
1942		.583		.583
1943		.977		.977
1944		1.09		1.09
1945		1.36		1.36
1946		1.94		1.94
1947		2.28		2.28
1948		1.43		1.43
1949		1.20		1.20
1950		1.31		1.31
1951		1.52		1.52
1952		1.72		1.72
1953		1.29		1.29
1954		1.21		1.21
1955		1.06		1.06
1956		1.15		1.15
1957		1.07		1.07

AP-5, SOURCES

COL. A, Strauss & Bean, Table 19, farm price, December 1 for 1870 through 1907 and season average for 1908 through 1937.

COL. B

1909-50. AMS Stat. Bull. 180, p. 4, farm price, season average.

1951-57. AMS Stat. Bull. 159, supplement for 1959, p. 37.

COL. C, Ratio, Col. B/Col. A.

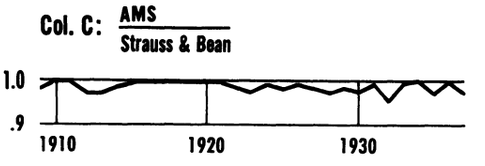
COL. D, Preferred series

1870-1908. Col. A, transcribed.

1909-57. Col. B, transcribed.

AP-5, NOTES

The two series are sufficiently close during the period of overlap to permit carrying forward from Strauss & Bean to AMS at 1909.



There are slight differences between our preferred series and that published in *Ag. Stat. 1952* and *1957*.

AP-6. CORN: Price

	USDA, Dec. 1 price on farms ($ per bu.)	AMS, season average price ($ per bu.)	Col. B / Col. A	Strauss & Bean, calendar year price ($ per bu.)	Ag. Stat., market price	Col. E / Col. G	Preferred series, farm price ($ per bu.)
	A	B	C	D	E	F	G
1870	.521			.72	.52	.94	.551
1871	.464			.55	.42	.86	.491
1872	.383			.44	.35	.86	.405
1873	.483			.44	.57	1.11	.511
1874	.641			.67	.69	1.02	.678
1875	.419			.71	.47	1.06	.443
1876	.361			.50	.45	1.18	.382
1877	.357			.50	.41	1.08	.378
1878	.313			.44	.33	1.00	.331
1879	.364			.43	.38	.99	.385
1880	.390			.47	.44	1.06	.413
1881	.628			.60	.67	1.01	.664
1882	.481			.77	.57	1.02	.509
1883	.418			.57	.53	1.20	.442
1884	.349			.57	.44	1.19	.369
1885	.322			.50	.38	1.11	.341
1886	.357			.43	.37	.98	.378
1887	.424			.46	.48	1.07	.449
1888	.331			.53	.36	1.03	.350
1889	.275			.40	.35	1.20	.291
1890	.496			.45	.57	1.09	.525
1891	.398			.49	.48	1.14	.421
1892	.393			.40	.41	.99	.416
1893	.361			.38	.40	1.05	.382
1894	.451			.40	.45	.94	.477
1895	.252			.41	.27	1.01	.267
1896	.214			.22	.24	1.06	.226
1897	.260			.21	.30	1.09	.275
1898	.285			.29	.34	1.13	.302
1899	.298			.31	.36	1.14	.315
1900	.350			.36	.43	1.16	.370
1901	.600			.47	.61	.96	.635
1902	.401			.57	.48	1.13	.424
1903	.419			.43	.48	1.08	.443
1904	.436			.46	.50	1.08	.461
1905	.406			.46	.46	1.07	.430
1906	.391			.44	.48	1.16	.414
1907	.505			.50	.67	1.25	.534
1908	.597			.67	.68	1.08	.632
1909	.579	.576	.995	.67	.60	1.04	.576
1910	.471	.475	1.01	.55	.52	1.09	.475
1911	.610	.649	1.06	.52	.72	1.11	.649
1912	.473	.511	1.08	.61	.54	1.06	.511
1913	.679	.659	.971	.57	.70	1.06	.659
1914	.635	.673	1.06	.66	.70	1.04	.673
1915	.568	.651	1.15	.66	.77	1.18	.651
1916	.881	1.13	1.28	.73	1.10	.97	1.13
1917	1.269	1.39	1.10	1.29	1.69	1.22	1.39
1918	1.351	1.45	1.07	1.42	1.62	1.12	1.45
1919	1.342	1.44	1.07	1.45	1.59	1.10	1.44
1920	.656	.540	.823	1.26	.64	1.18	.540
1921	.413	.464	1.12	.49	.54	1.16	.464
1922	.650	.688	1.06	.54	.73	1.06	.688
1923	.713	.760	1.07	.74	.85	1.12	.760
1924	.980	1.02	1.04	.85	1.09	1.07	1.02
1925	.670	.654	.976	.91	.75	1.15	.654
1926	.637	.715	1.12	.66	.85	1.19	.715
1927	.718	.804	1.12	.75	1.00	1.24	.804
1928		.798		.81	.93	1.16	.798
1929		.764		.83	.84	1.10	.764
1930		.550		.74	.62	1.13	.550
1931		.294		.44	.36	1.22	.294
1932		.292		.25	.34	1.16	.292
1933		.494		.34	.50	1.01	.494
1934		.802		.59	.86	1.07	.802
1935		.632		.70	.74	1.17	.632
1936		1.03		.73	1.21	1.17	1.03
1937		.490		.76	.57	1.16	.490
1938		.469			.48	1.02	.469
1939		.542			.54	1.00	.542
1940		.601			.67	1.11	.601
1941		.736			.79	1.07	.736
1942		.894			.91	1.02	.894
1943		1.08			1.14	1.06	1.08
1944		1.03			1.15	1.12	1.03
1945		1.23			1.94	1.58	1.23
1946		1.53			1.80	1.18	1.53
1947		2.16			2.33	1.08	2.16
1948		1.28			1.38	1.08	1.28
1949		1.24			1.29	1.04	1.24
1950		1.52			1.73	1.14	1.52
1951		1.66			1.83	1.10	1.66
1952		1.52			1.59	1.05	1.52
1953		1.48			1.53	1.03	1.48
1954		1.43			1.48	1.03	1.43
1955		1.35			1.24	.92	1.35
1956		1.29			1.31	1.02	1.29
1957		1.11			1.21	1.09	1.11

AP-6, SOURCES

COL. A, *Hist. Stat. 1949,* series E-184, farm price, December 1 for 1870 through 1927 (source, USDA).

COL. B

1909-51. AMS Stat. Bull. 180, Table 4, farm price, season average.

1952-57. Supplement for 1959 to AMS Stat. Bull. 159, p. 18.

COL. C, Ratio, Col. B/Col. A.

COL. D, Strauss & Bean, p. 39, farm price, calendar year.

COL. E, *Ag. Stat. 1952,* Table 38, and *Ag. Stat. 1959,* Table 38, market price at Chicago, $ per bushel, year beginning October (No. 2 or better for 1870 through 1898 and No. 3 yellow for 1899 through 1957).

COL. F, Ratio, Col. E/Col. G.

COL. G, Preferred series

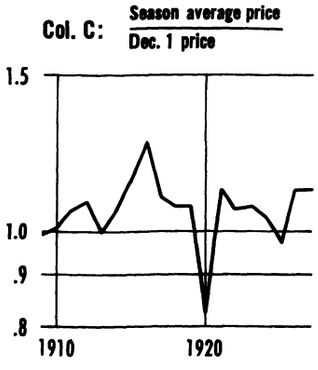
1870-1908. Col. A times the geometric average of the ratios found in Col. C (ratio, 1.058).

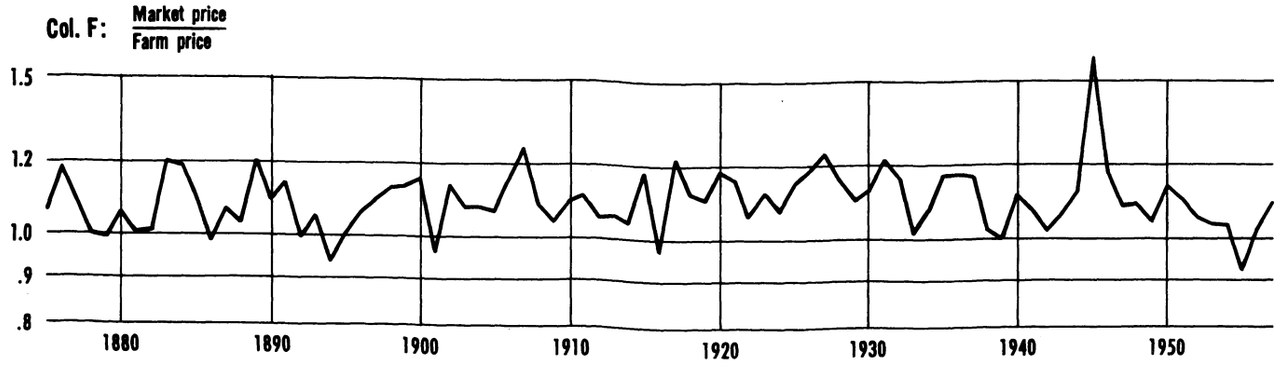
1909-57. Col. B, transcribed.

AP-6, NOTES

The Col. C chart shows that the season average farm price for corn is about 6% higher than the December 1 price for the years of overlap, 1909-27. Because of this difference of level, it was found necessary to adjust the December 1 farm price to the level of the season average price. Both Strauss & Bean and Barger & Landsberg move directly from December 1 to a season average price without adjustment.

The Department of Agriculture publishes another series (cf. *Ag. Stat. 1957,* p. 34) which runs a few cents higher, owing to weighting by production; Col. B (and G) is weighted by sales, which are largest in the surplus producing or "exporting" states (AMS Stat. Bull. 159, p. 37).





AP-7. BARLEY: Price

	Season average farm price (¢ per bu.)
	A
1870	85.3
1871	77.1
1872	73.8
1873	96.3
1874	96.2
1875	85.6
1876	68.5
1877	63.3
1878	58.4
1879	59.9
1880	66.3
1881	81.9
1882	63.1
1883	58.9
1884	48.3
1885	55.7
1886	53.1
1887	52.0
1888	59.1
1889	41.5
1890	62.1
1891	52.2
1892	46.6
1893	40.2
1894	43.7
1895	32.8
1896	29.6
1897	34.3
1898	38.9
1899	38.8
1900	40.7
1901	45.4
1902	45.3
1903	44.7
1904	41.2
1905	39.4
1906	41.8
1907	66.5
1908	56.6
1909	55.9
1910	60.7
1911	82.5
1912	50.9
1913	52.5
1914	53.6
1915	52.0
1916	80.4
1917	123
1918	95.1
1919	124
1920	84.9
1921	47.9
1922	49.9
1923	54.6
1924	74.2
1925	61.4
1926	57.9
1927	68.9
1928	56.8
1929	53.9
1930	40.5
1931	32.8
1932	22.1
1933	43.4
1934	68.6
1935	37.9
1936	78.2
1937	54.2
1938	36.8
1939	40.5
1940	[a]39.7
1941	[a]52.9
1942	[a]63.2
1943	99.1
1944	[a]102
1945	102
1946	136
1947	170
1948	[a]115
1949	[a]104
1950	[a]118
1951	[a]124
1952	[a]135
1953	[a]115
1954	[a]108
1955	[a]91.7
1956	[a]98.4
1957	[a]87.9

AP-8. OATS: Price

	Season average farm price (¢ per bu.)
	A
1870	42.6
1871	38.5
1872	32.2
1873	37.4
1874	52.0
1875	36.7
1876	34.9
1877	28.8
1878	24.0
1879	32.6
1880	34.9
1881	45.5
1882	37.1
1883	32.4
1884	27.2
1885	27.9
1886	28.9
1887	29.7
1888	27.0
1889	21.9
1890	41.7
1891	30.6
1892	31.5
1893	28.9
1894	32.0
1895	19.3
1896	18.3
1897	21.0
1898	25.1
1899	24.5
1900	25.3
1901	39.7
1902	30.5
1903	33.7
1904	30.9
1905	28.8
1906	31.7
1907	44.4
1908	49.2
1909	42.8
1910	35.6
1911	44.9
1912	33.7
1913	38.6
1914	43.9
1915	38.3
1916	48.7
1917	70.1
1918	68.5
1919	76.7
1920	54.0
1921	32.2
1922	37.4
1923	40.7
1924	47.8
1925	38.9
1926	40.0
1927	47.1
1928	40.7
1929	41.8
1930	32.2
1931	21.3
1932	15.7
1933	33.5
1934	48.1
1935	26.4
1936	44.9
1937	30.2
1938	23.8
1939	31.0
1940	30.3
1941	41.1
1942	48.8
1943	72.2
1944	70.9
1945	66.7
1946	80.9
1947	105.0
1948	[a]72.3
1949	[a]65.5
1950	[a]79.0
1951	[a]82.1
1952	[a]78.3
1953	[a]74.0
1954	[a]71.1
1955	[a]59.5
1956	[a]68.8
1957	[a]60.8

AP-7 (Barley), SOURCES

COL. A, Strauss & Bean, p. 44, the December 1 farm price, for 1870 through 1908. *Ag. Stat. 1952*, p. 56, and *Ag. Stat. 1959*, p. 44; season average farm price, 1909 through 1957.

AP-7, NOTES

[a] Including allowance for unredeemed loan and purchase agreement deliveries at the average rate.

The Strauss & Bean and *Agricultural Statistics* series for the years of overlap, 1909 through 1937, are identical. The December 1 price, carried forward to 1920 (*Ag. Yearbook, 1923*), averages about the same as the season average price for the period of overlap, 1909 through 1920.

AMS Stat. Bulls. 159 and 180 carry series weighted by sales rather than production. These run a little lower, as sales are heavier in the "surplus" producing states.

AP-8 (Oats), SOURCES

COL. A, *Ag. Stat. 1952*, p. 47, and *Ag. Stat. 1959*, p. 38; December 1 price, 1870 through 1908, and season average farm price, 1909 through 1957.

AP-8, NOTES

[a] Including allowance for unredeemed loan and purchase agreement deliveries at the average rate.

The December 1 price, carried forward to 1920 (*Ag. Yearbook, 1923*), averages about the same as the season average price for the period of overlap, 1909 through 1920.

AMS Stat. Bulls. 159 and 180 carry series weighted by sales rather than production. These run a little lower, as sales are heavier in the "surplus" producing states.

AP-9. SORGHUM: Price

	Ag. Yearbook & Ag. Stat. (¢ per bu.)	Ag. Stat., grain (¢ per bu.)	Ag. Stat., forage ($ per ton)	Preferred series, price for grain (¢ per bu.)
	A	B	C	D
1915	44.7			44.7
1916	105.9			105.9
1917	161.9			161.9
1918	150.0			150.0
1919	128.0			128.0
1920	94.2			94.2
1921	39.2			39.2
1922	87.2			87.2
1923	93.5			93.5
1924	85.7			85.7
1925	75.3			75.3
1926	54.4			54.4
1927	80.4			80.4
1928	68.4			68.4
1929	73.2	74.5	9.98	74.5
1930	56.9	55.3	9.62	55.3
1931	26.3	30.0	6.01	30.0
1932	29.8	29.8	4.18	29.8
1933	51.0	50.6	5.45	50.6
1934	99.8	94.8	10.61	94.8
1935	56.1	55.3	6.15	55.3
1936	94.8	94.8	8.38	94.8
1937	48.8	50.1	7.08	50.1
1938	39.3	39.1	4.87	39.1
1939	56.6	56.9	5.82	56.9
1940	48.4	47.8	5.22	47.8
1941	54.9	54.9	5.25	54.9
1942		77.7	5.55	77.7
1943		114	13.00	114
1944		[a]91.3	10.90	91.3
1945		119	12.10	119
1946		139	14.60	139
1947		183	17.40	183
1948		[a]128	16.00	128
1949		[a]112	12.80	112
1950		[a]105	13.40	105
1951		[a]132	19.70	132
1952		[a]157	24.90	157
1953		[a]131	15.90	131
1954		[a]126	17.70	126
1955		[a]98.1	15.60	98.1
1956		115	20.50	115
1957		97	13.10	97

AP-9, SOURCES

COL. A, *Ag. Yearbook 1923*, p. 729 for 1915-18, and *Ag. Stat. 1942*, p. 92. For 1919-24, November 15 price; for 1925-26, December 1 price; for 1927-41, season average farm price for sorghums.

COL. B, *Ag. Stat. 1952*, p. 66, and *1959*, p. 53, season average farm price per bushel for sorghum grain.

COL. C, *Ag. Stat. 1952*, p. 66, and *1959*, p. 53, season average farm price per ton for sorghum forage.

COL. D, Preferred series

1915-28. Col. A, transcribed.

1929-57. Col. B, transcribed.

AP-9, NOTES

[a] Allowance for unredeemed loan and purchase agreement deliveries at the average rate.

The sources for Col. A state that the price is for both sorghum grain and sorghum used for forage. It is, however, a price per bushel and is almost identical to the series in Col. B (grain) for the period of overlap, 1929-41. The two have been combined in Col. D to make a consistent series running back to 1915.

AP-10. HAY: Price

	BAE, tame hay, loose ($ per ton)	Col. E / Col. A	AMS, all hay, baled ($ per ton)	Col. E / Col. C	Preferred series, all hay, loose ($ per ton)
	A	B	C	D	E
1870	14.45				13.75
1871	16.57				15.76
1872	15.35				14.60
1873	14.40				13.70
1874	13.85				13.18
1875	12.75				12.13
1876	9.80				9.32
1877	8.72				8.30
1878	7.32				6.96
1879	9.63				9.16
1880	11.82				11.24
1881	12.25				11.65
1882	9.99				9.50
1883	8.77				8.34
1884	8.99				8.55
1885	10.07				9.58
1886	8.72				8.30
1887	10.09				9.60
1888	9.24				8.79
1889	7.74				7.36
1890	8.11				7.72
1891	8.65				8.23
1892	8.78				8.35
1893	9.48				9.02
1894	8.98				8.54
1895	9.63				9.16
1896	7.60				7.23
1897	7.21				6.86
1898	6.52				6.20
1899	8.20				7.80
1900	9.78				9.30
1901	9.88				9.40
1902	9.05				8.61
1903	9.18				8.73
1904	8.82				8.39
1905	8.49				8.08
1906	10.40				9.89
1907	11.60				11.04
1908	9.08				8.64
1909	10.50	.971			10.20
1910	12.16	.962			11.70
1911	14.41	.978			14.10
1912	11.68	.925			10.80
1913	12.36	.922			11.40
1914	11.11	.954			10.60
1915	10.65	.967			10.30
1916	11.18	.993			11.10
1917	17.08	.966			16.50
1918	20.07	.972			19.50
1919	20.15	1.04			20.90
1920	17.78	.928			16.50
1921	12.09	.959			11.60
1922	12.55	.924			11.60
1923	14.10	.929			13.10
1924	13.82	.919			12.70
1925	13.99	.915			12.80
1926	14.11	.943			13.30
1927	11.32	.910			10.30
1928	12.25	.922			11.30
1929	12.22	.892			10.90
1930	12.66	.877			11.10
1931	9.03	.967			8.73
1932	6.69	.927			6.20
1933	8.18	.989			8.09
1934	14.01	.942			13.20
1935	7.81	.963			7.52
1936	11.43	.976			11.16
1937	9.18	.952			8.74
1938	7.19	.943			6.78
1939			10.30	.771	7.84
1940			9.78	.775	7.45
1941			12.30	.786	9.37
1942			14.60	.740	11.12
1943			19.90	.744	15.16
1944			21.40	.771	16.29
1945			20.30	.744	15.46
1946			22.70		17.28
1947			22.90		17.44
1948			24.30		18.50
1949			21.10		16.07
1950			21.10		16.07
1951			25.70		19.57
1952			26.90		20.48
1953			21.90		16.67
1954			21.90		16.67
1955			22.50		17.13
1956			22.40		17.06
1957			19.00		14.47

AP-10, SOURCES

COL. A, Tame hay, loose. *Hist. Stat. 1949,* series E-216, December 1 farm price (source, Bureau of Agricultural Economics).

COL. B, Ratio, Col. E/Col. A 1909 through 1938.

COL. C, All hay, baled

1909-50. AMS Stat. Bull. 180, p. 20, season average farm price.

1951-57. AMS Stat. Bull. 159, supplement for 1959, p. 58.

COL. D, Ratio, Col. E/Col. C 1939 through 1945.

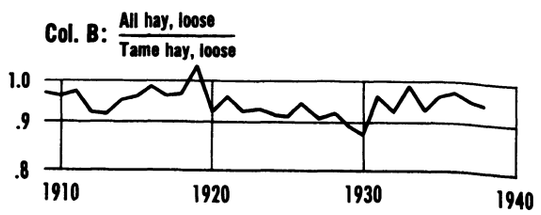
COL. E, Preferred series, all hay, loose

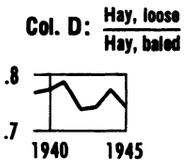
1870-1908. Col. A times the geometric average of the ratios in Col. B for the years 1909 through 1913 (ratio, .9513).

1909-38. *Hist. Stat. 1949,* series E-215, season average farm price for all hay, loose (source, Bureau of Agricultural Economics).

1939-57. Col. C times the geometric average of the ratios in Col. D.

AP-10, NOTES





COL. E. Three series for the price of hay have been spliced together to obtain a long-term consistent series, estimating a season average farm price for all hay, loose. The earliest series (Col. A), for tame hay, has been lowered 4.87% to match the level of prices for all hay, loose. The currently given price for hay is for all hay, baled (Col. C). This has been lowered 23.86% to match the level for all hay, loose. The two accompanying charts indicate that these adjustments should be fairly reliable, since the relationships are reasonably stable.

There was some improvement in the average quality of hay after 1919, when records of kinds were first kept. In 1919, 21% was alfalfa, 46% was clover and timothy, and 17% was wild hay. In 1957, these percentages were 69, 18, and 9, respectively. Since alfalfa and clover-timothy hays bear premiums of 1-10% over "all hay" in most years, this shift in composition of all hay presumably caused a rise in the average price of all hay of a few percentage points. There may also have been an improvement in the condition of all kinds of hay, due to better harvesting and storage methods during this period.

(For data, see *Ag. Stat. 1957,* p. 332, and AMS Stat. Bull. 159, p. 87.)

AP-11. POTATOES: Price

	AMS Stat. Bull.	Col. A / Col. E	Ag. Stat., season average price, New York ($ per bu.)	Col. E / Col. C	Preferred series, Ag. Stat., season average farm price ($ per bu.)
	A	B	C	D	E
1870			1.06	.668	.708
1871			.66	.876	.578
1872			.86	.695	.598
1873			.91	.765	.696
1874			.70	.960	.672
1875			.39	.982	.383
1876			1.13	.583	.659
1877			.53	.842	.446
1878			.84	.696	.585
1879			.45	.960	.432
1880			.65	.742	.482
1881			1.08	.845	.913
1882			.77	.708	.545
1883			.41	1.007	.413
1884			.48	.796	.382
1885			.55	.800	.440
1886			.59	.771	.455
1887			.72	.961	.692
1888			.38	1.029	.391
1889			.57	.630	.359
1890			1.01	.767	.775
1891			.41	.880	.361
1892			.73	.900	.657
1893			.63	.936	.590
1894			.58	.922	.535
1895			.24	1.108	.266
1896			.36	.806	.290
1897			.72	.768	.553
1898			.52	.812	.422
1899			.50	.802	.401
1900			.53	.811	.430
1901			.79	.971	.767
1902			.65	.729	.474
1903			.89	.688	.612
1904			.43	1.053	.453
1905			.73	.838	.612
1906			.57	.889	.507
1907			.75	.811	.608
1908			.83	.907	.753
1909	.567	.998	.49	1.159	.568
1910	.582	.990	.54	1.089	.588
1911	.929	.985	1.06	.890	.943
1912	.553	.993	.62	.898	.557
1913	.666	.974	.78	.874	.682
1914	.548	.980	.47	1.189	.559
1915	.681	1.00	1.03	.661	.681
1916	1.50	.982	2.38	.642	1.528
1917	1.27	1.01	1.29	.973	1.255
1918	1.17	.985	1.27	.935	1.188
1919	1.91	.987	2.84	.682	1.936
1920	1.26	1.01	.99	1.26	1.253
1921	1.10	.971	1.18	.960	1.133
1922	.664	1.01	.91	.724	.659
1923	.937	1.01	1.09	.849	.925
1924	.682	.994	.79	.868	.686
1925	1.70	.997	2.49	.685	1.705
1926	1.29	.982	1.70	.773	1.314
1927	.997	.978	1.40	.728	1.019
1928	.528	1.01	.87	.601	.523
1929	1.30	.988	1.80	.731	1.316
1930	.882	.967	1.18	.773	.912
1931	.449	.976	.65	.708	.460
1932	.376	.989	.64	.594	.380
1933	.806	.978	1.18	.698	.824
1934	.424	.951	.58	.769	.446
1935	.588	.992	1.06	.559	.593
1936	1.12	.981	1.37	.834	1.142
1937	.502	.949	.75	.705	.529
1938	.538	.969	.88	.631	.555
1939	.694	.997	1.15	.605	.696
1940	.510	.970	.65	.809	.526
1941	.786	1.00	1.10	.714	.786
1942	1.14	1.00	1.48	.770	1.14
1943	1.26	.984	1.67	.766	1.28
1944	1.44	.980	1.95	.754	1.47
1945	1.38	.986	1.80	.778	1.40
1946	1.21	.992	1.58	.772	1.22
1947	1.60	.994	2.02	.797	1.61
1948	1.52	.993	2.11	.725	1.53
1949	1.27	.992	1.63	.785	1.28
1950	.901	.981	1.12	.820	.918
1951	1.63	1.00	2.47	.660	1.63
1952	1.94	.995	2.15	.907	1.95
1953	.781	.979	1.15	.694	.798
1954	1.30	1.00	1.92	.677	1.30
1955	1.06	.99	1.79	.598	1.07
1956	1.21	1.00	1.57	.771	1.21
1957	1.16	1.00	2.05	.566	1.16

AP-11, SOURCES

COL. A, Agricultural Marketing Service, Statistical Bulletin 140, *Potato Prices* (Washington, Mar. 1954), p. 2, and supplements, prices received by farmers, crop years—state average prices weighted by sales by states and by months.

COL. B, Ratio, Col. A/Col. E.

COL. C

1870-1943. *Ag. Stat. 1952*, p. 295, wholesale price per bushel at New York.

1944-57. *Ag. Stat. 1959*, p. 242, times 0.60 (to convert from price per cwt. to price per bu.).

COL. D, Ratio, Col. E/Col. C.

COL. E, Preferred series

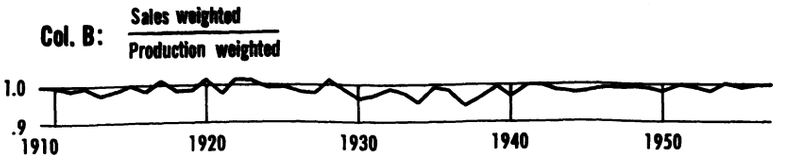
1870-1938. *Ag. Stat. 1952*, p. 295, season average price received by farmers.

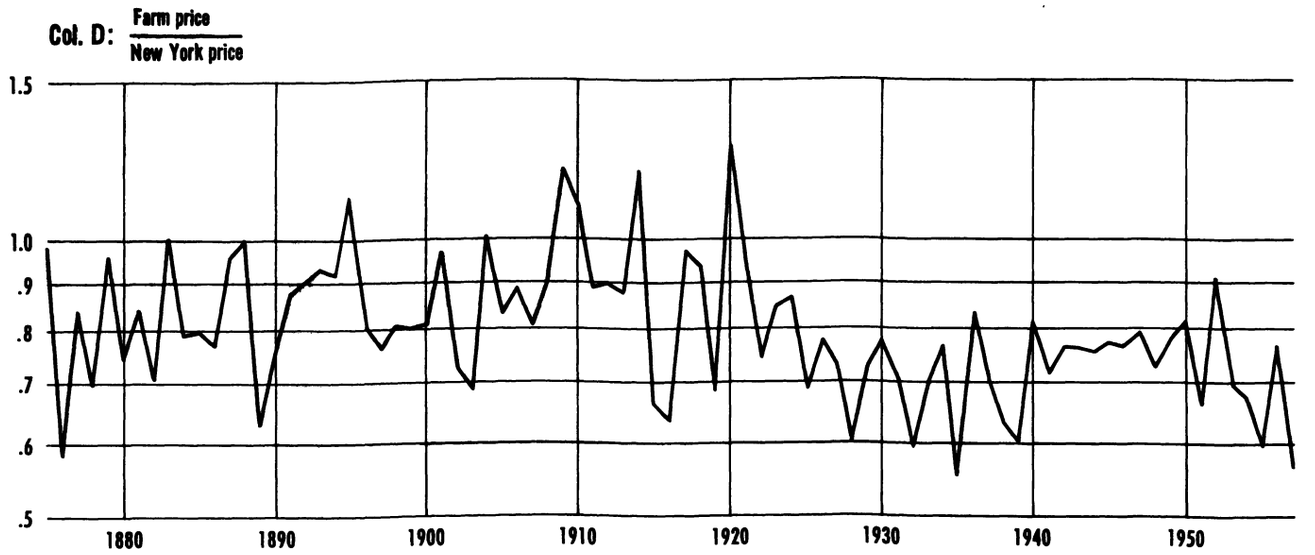
1939-50. *Ag. Stat. 1956*, p. 231, times 0.60 (to convert from price per cwt. to price per bu.).

1951-57. *Ag. Stat. 1959*, p. 242, times 0.60 (bu./cwt.).

AP-11, NOTES

The series in Col. A has been weighted by sales. The series in Col. E has been weighted by production estimates. For years prior to 1909, the latter prices are those received on about December 1 of the crop year. Since 1908 all series are season average prices.





AP-12. TOMATOES: Price

AP-12, SOURCES

COL. A, *Ag. Stat. 1952,* p. 312, season average farm price for processing tomatoes per ton.

COL. B, *Ag. Stat. 1952,* p. 312, season average farm price for fresh market tomatoes per bushel.

COL. C, *Ag. Stat. 1956,* p. 245, and *1959,* p. 256, season average farm price for processing tomatoes per ton.

COL. D, *Ag. Stat. 1956,* p. 245, and *1959,* p. 256 (times .53 to convert from cwt. to bu.), season average farm price for fresh market tomatoes per bushel.

COL. E, Preferred series, processing tomatoes

1918-38. Col. A, transcribed.

1939-57. Col. C, transcribed.

COL. F, Preferred series, fresh tomatoes

1918-38. Col. B, transcribed.

1939-57. Col. D, transcribed.

AP-12, NOTES

No earlier prices for tomatoes are available. The differences between Cols. A and C and between Cols. B and D are due to adjustments made by the Agricultural Marketing Service in the production figures. The new series include production from farms located near markets as well as production from major commercial areas. The differences between the old series and the new are so slight as not to warrant adjustments.

Movements of the two series are so different as to call for separate tabulation.

	Ag. Stat. 1952, processing tomatoes ($ per ton)	Ag. Stat. 1952, fresh tomatoes ($ per bu.)	Ag. Stat., processing tomatoes ($ per ton)	Ag. Stat., fresh tomatoes ($ per bu.)	Preferred series: Processing tomatoes ($ per ton)	Preferred series: Fresh tomatoes ($ per bu.)
	A	B	C	D	E	F
1918	21.73	1.48			21.73	1.48
1919	18.50	1.51			18.50	1.51
1920	19.80	1.63			19.80	1.63
1921	11.65	1.77			11.65	1.77
1922	12.62	1.98			12.62	1.98
1923	13.56	2.33			13.56	2.33
1924	15.71	2.01			15.71	2.01
1925	14.79	2.08			14.79	2.08
1926	14.71	2.03			14.71	2.03
1927	14.31	1.65			14.31	1.65
1928	14.19	1.64			14.19	1.64
1929	15.25	1.73			15.25	1.73
1930	15.05	1.58			15.05	1.58
1931	11.80	1.10			11.80	1.10
1932	10.08	.98			10.08	.98
1933	11.39	1.10			11.39	1.10
1934	12.03	1.20			12.03	1.20
1935	11.73	1.13			11.73	1.13
1936	12.59	1.31			12.59	1.31
1937	13.11	1.31			13.11	1.31
1938	12.41	1.07			12.41	1.07
1939	12.14	1.38	12.14	1.36	12.14	1.36
1940	11.80	1.22	11.80	1.21	11.80	1.21
1941	15.06	1.58	15.13	1.59	15.13	1.59
1942	19.70	2.09	19.77	2.11	19.77	2.11
1943	26.28	2.84	26.35	2.88	26.35	2.88
1944	27.22	3.05	27.18	3.08	27.18	3.08
1945	27.58	3.31	27.64	3.32	27.64	3.32
1946	30.42	2.87	30.65	2.89	30.65	2.89
1947	28.63	3.13	28.67	3.19	28.67	3.19
1948	27.71	3.20	27.92	3.23	27.92	3.23
1949	23.79	2.92	23.89	2.96	23.89	2.96
1950	25.30	3.33	25.30	3.40	25.30	3.40
1951	31.50	3.46	31.40	3.48	31.40	3.48
1952			29.10	4.02	29.10	4.02
1953			27.30	3.73	27.30	3.73
1954			24.30	3.48	24.30	3.48
1955			24.90	3.58	24.90	3.58
1956			25.70	4.15	25.70	4.15
1957			25.20	3.96	25.20	3.96

AP-13. LETTUCE: Price

AP-13, SOURCES

COL. A, *Ag. Stat. 1952,* Table 329, season average farm price.

COL. B, *Ag. Stat. 1956,* Table 324, season average farm price.

COL. C, *Ag. Stat. 1957,* Table 336, and *1959,* Table 345.

COL. D, Ratio, Col. B/Col. C.

COL. E, Preferred series

1918-38. Col. A, transcribed.

1939-55. Col. B, transcribed.

1956-57. Col. C times .76, to convert from cwt. to crates.

AP-13, NOTES

No lettuce prices are available for the period prior to 1918.

For the period following 1939, *Ag. Stat. 1956* includes estimates for production in local areas close to consuming centers as well as production in well-recognized commercial areas which specialize in producing supplies for shipment to distant markets. The resulting differences in average price are not great.

Ag. Stat. 1957 gives a conversion factor of 70 lb. per crate. However, the price (and also the output) figures in *Ag. Stat. 1956* and *1957* differ as shown in Col. D, indicating a proper link at any point from 1946 to 1955 is about 76 lb./crate.

	Ag. Stat. 1952, farm price ($ per crate)	Ag. Stat. 1956, farm price ($ per crate)	Ag. Stat. 1957, farm price ($ per cwt.)	Col. B / Col. C	Preferred series, farm price ($ per crate)
	A	B	C	D	E
1918	1.63				1.63
1919	1.91				1.91
1920	1.53				1.53
1921	1.89				1.89
1922	1.88				1.88
1923	1.60				1.60
1924	1.57				1.57
1925	1.46				1.46
1926	1.68				1.68
1927	1.34				1.34
1928	1.70				1.70
1929	1.84				1.84
1930	1.72				1.72
1931	1.48				1.48
1932	1.29				1.29
1933	1.30				1.30
1934	1.40				1.40
1935	1.46				1.46
1936	1.46				1.46
1937	1.58				1.58
1938	1.52				1.52
1939	1.38	1.34	1.91	.70	1.34
1940	1.48	1.48	2.11	.70	1.48
1941	1.67	1.77	2.53	.70	1.77
1942	2.54	2.63	3.64	.72	2.63
1943	3.31	3.25	4.44	.73	3.25
1944	2.61	2.60	3.50	.74	2.60
1945	2.93	2.96	3.94	.75	2.96
1946	2.60	2.61	3.41	.76	2.61
1947	3.19	3.23	4.21	.77	3.23
1948	3.15	3.09	4.04	.76	3.09
1949	3.70	3.69	4.84	.76	3.69
1950	2.64	2.66	3.48	.76	2.66
1951	3.16	3.39	4.44	.76	3.39
1952		3.15	4.13	.76	3.15
1953		3.04	4.00	.76	3.04
1954		3.08	4.03	.76	3.08
1955		3.31	4.34	.76	3.31
1956			4.00		3.04
1957			4.29		3.26

AP-14. FRUITS: Price

AP-14, SOURCES

COL. A, USDA, Agricultural Marketing Service, *Agricultural Prices,* May 1956, Supplement No. 1, p. 45; *Ag. Prices,* Feb. 1959, Supplement No. 1, p. 41: average of mid-month farm prices, 1910-14 = 100.

AP-14, NOTES

The fruits price index covers apples, grapes, grapefruit, lemons, oranges, peaches, pears, and strawberries. There are no indexes for orchard fruits and citrus fruits separately for this period, nor is there an all-fruits price index for the period prior to 1910, other than the Strauss & Bean series.

Beginning in 1952, the series consists of revisions by the Department of Agriculture spliced to the earlier data. The revisions are generally based on the introduction of a new weight base period, 1953-1957.

	Fruit, farm prices (1910-14 = 100)
	A
1910	100
1911	105
1912	97
1913	105
1914	93
1915	82
1916	97
1917	115
1918	162
1919	172
1920	188
1921	164
1922	164
1923	136
1924	131
1925	165
1926	140
1927	138
1928	154
1929	131
1930	149
1931	97
1932	78
1933	74
1934	93
1935	89
1936	102
1937	117
1938	72
1939	74
1940	81
1941	94
1942	127
1943	207
1944	233
1945	228
1946	240
1947	186
1948	166
1949	196
1950	194
1951	181
1952	188
1953	196
1954	209
1955	202
1956	215
1957	203

AP-15. APPLES: Price

	S & B, apples, farm price ($ per bu.)	AMS, farm price, total apple crop ($ per bu.)	AMS, farm price, commercial apples ($ per bu.)	B & L, apples, farm ($ per bu.)	1897-1908, Col. D/Col. A; 1909-38, Col. D/Col. B	S & B farm, total orchard fruits ($ per bu.)	1870-1908, Col. F/Col. A; 1909-37, Col. F/Col. B	Preferred series, farm price ($ per bu.)
	A	B	C	D	E	F	G	H
1870	.57					.43	.75	.57
1871	.95					.72	.76	.95
1872	.56					.42	.75	.56
1873	.79					.60	.76	.79
1874	.60					.45	.75	.60
1875	.69					.52	.75	.69
1876	.51					.39	.76	.51
1877	.70					.53	.76	.70
1878	.43					.33	.77	.43
1879	.43					.33	.77	.43
1880	.40					.30	.75	.40
1881	.61					.46	.75	.61
1882	.92					.70	.76	.92
1883	.68					.52	.76	.68
1884	.51					.39	.76	.51
1885	.42					.32	.76	.42
1886	.53					.40	.75	.53
1887	.51					.39	.76	.51
1888	.43					.33	.77	.43
1889	.54					.41	.76	.54
1890	.82					.63	.77	.82
1891	.38					.29	.76	.38
1892	.59					.45	.76	.59
1893	.66					.51	.77	.66
1894	.49					.38	.78	.49
1895	.46					.35	.76	.46
1896	.29					.22	.76	.29
1897	.53			.73	1.38	.41	.77	.53
1898	.65			.98	1.51	.50	.77	.65
1899	.52			.70	1.35	.40	.77	.52
1900	.36			.68	1.89	.29	.81	.36
1901	.60			.86	1.43	.48	.80	.60
1902	.46			.50	1.09	.37	.80	.46
1903	.43			.59	1.37	.34	.79	.43
1904	.44			.56	1.27	.35	.80	.44
1905	.54			.96	1.78	.43	.80	.54
1906	.57			.76	1.33	.45	.79	.57
1907	.84			.78	.93	.67	.80	.84
1908	.70			.88	1.26	.56	.80	.70
1909	.79	.78		.85	1.09	.63	.81	.78
1910		.80		.87	1.09	.90	1.12	.80
1911		.68		.77	1.13	.78	1.15	.68
1912		.62		.66	1.06	.69	1.11	.62
1913		.89		.92	1.03	.95	1.07	.89
1914		.57		.62	1.09	.65	1.14	.57
1915		.68		.70	1.03	.73	1.07	.68
1916		.82		.89	1.09	.93	1.13	.82
1917		1.11		1.15	1.04	1.19	1.07	1.11
1918		1.28		1.38	1.08	1.42	1.11	1.28
1919		1.78		1.75	.98	1.89	1.06	1.78
1920		1.24		1.22	.98	1.46	1.18	1.24
1921		1.64		1.64	1.00	1.70	1.04	1.64
1922		.99		1.02	1.03	1.15	1.16	.99
1923		1.10		1.13	1.03	1.25	1.14	1.10
1924		1.23		1.21	.78	1.31	1.06	1.23
1925		1.26		1.25	.99	1.37	1.09	1.26
1926		.88		.89	1.01	1.00	1.14	.88
1927		1.48		1.40	.94	1.40	.95	1.48
1928		1.09		1.08	.99	1.14	1.05	1.09
1929		1.39		1.39	1.00	1.52	1.09	1.39
1930		1.03		1.02	.99	1.03	1.00	1.03
1931		.64		.66	1.03	.68	1.06	.64
1932		.61		.60	.98	.61	1.00	.61
1933		.79		.78	.99	.81	1.03	.79
1934		.89	.88	.89	1.00	.91	1.02	.88
1935		.73	.72	.72	.99	.79	1.08	.72
1936		1.04	1.04	1.05	1.01	1.01	.97	1.04
1937		.67	.64	.67	1.00	.85	1.27	.64
1938		.83	.82	.83	1.00			.82
1939			.64	.64				.64
1940			.80					.80
1941			.96					.96
1942			1.37					1.37
1943			2.39					2.39
1944			2.00					2.00
1945			2.94					2.94
1946			2.30					2.30
1947			1.79					1.79
1948			2.22					2.22
1949			1.38					1.38
1950			1.63					1.63
1951			1.74					1.74
1952			2.43					2.43
1953			2.57					2.57
1954			2.25					2.25
1955			1.95					1.95
1956			2.36					2.36
1957			1.86					1.86

AP-15, SOURCES

Col. A, Strauss & Bean, p. 82, weighted average farm price of apples per bushel.

Col. B, *Ag. Stat. 1952*, p. 188, season average price received by farmers for total apple crop.

Col. C

1934-54. *Ag. Stat. 1952*, p. 188, and *1956*, p. 144, season average price received by farmers for commercial apple crop.

1955-57. *Ag. Stat. 1958*, p. 153, fruits, noncitrus, by states, 1956 and 1957.

Col. D, Barger & Landsberg, Table A-1 (26), farm price for apples.

Col. E, Ratio, Col. D/Col. A, for 1897-1908; ratio, Col. D/Col. B, 1909-38.

Col. F, Strauss & Bean, p. 82, estimated farm price of total orchard fruits per bushel.

Col. G, Ratio, Col. F/Col. A, 1870-1908; ratio, Col. F/Col. B, 1909-37.

Col. H, Preferred series

1870-1908. Col. A, transcribed.

1909-33. Col. B, transcribed.

1934-57. Col. C, transcribed.

AP-15, NOTES

Strauss and Bean computed a weighted average price of apples for New York for the months of September through December, the weights based on marketings in each month. "This average weighted New York farm price for apples was combined with the BAE weighted-average farm price for Virginia and Maryland, New York having a weight of 2 as against 1 for Virginia and Maryland together." The result is given in Col. A. The Strauss & Bean estimated apple series ties in nicely with the AMS series at 1909, \$.79 for the former and \$.78 for the latter. The difference in price between total and commercial crops (Cols. B and C for 1934 through 1938) is negligible.

The Barger & Landsberg price for 1897 through 1909 "has been derived from an average New York wholesale price of six varieties" (B & L, p. 359). The difference between this and the series above is shown in the ratio column, E, and in the chart for Col. E. It is evident that the New York market price fell relative to the Strauss & Bean farm price between 1897 and 1910 or 1920. The reasons for the difference have not been investigated.

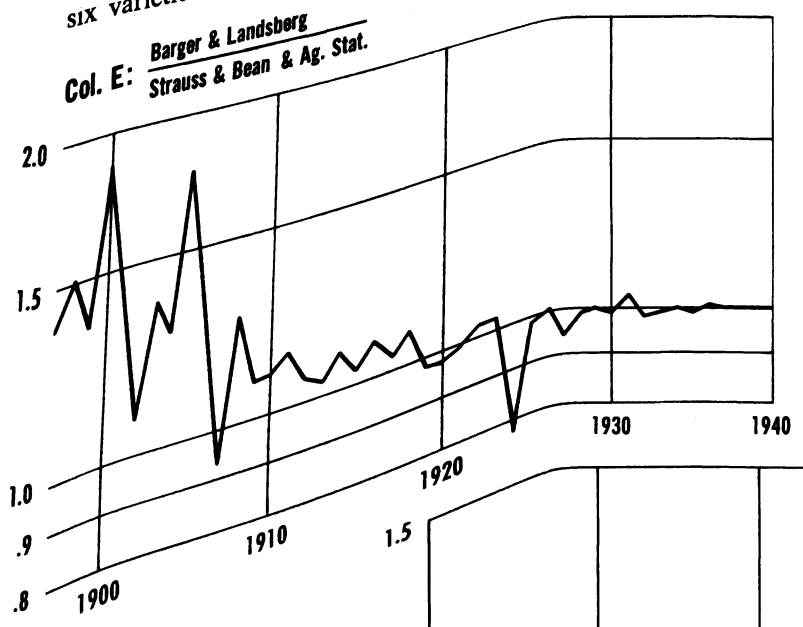
The preferred series on the price of apples, derived from Cols. A, B, and C, must be used with caution in view of the discrepancy between the Strauss & Bean and Barger & Landsberg estimates.

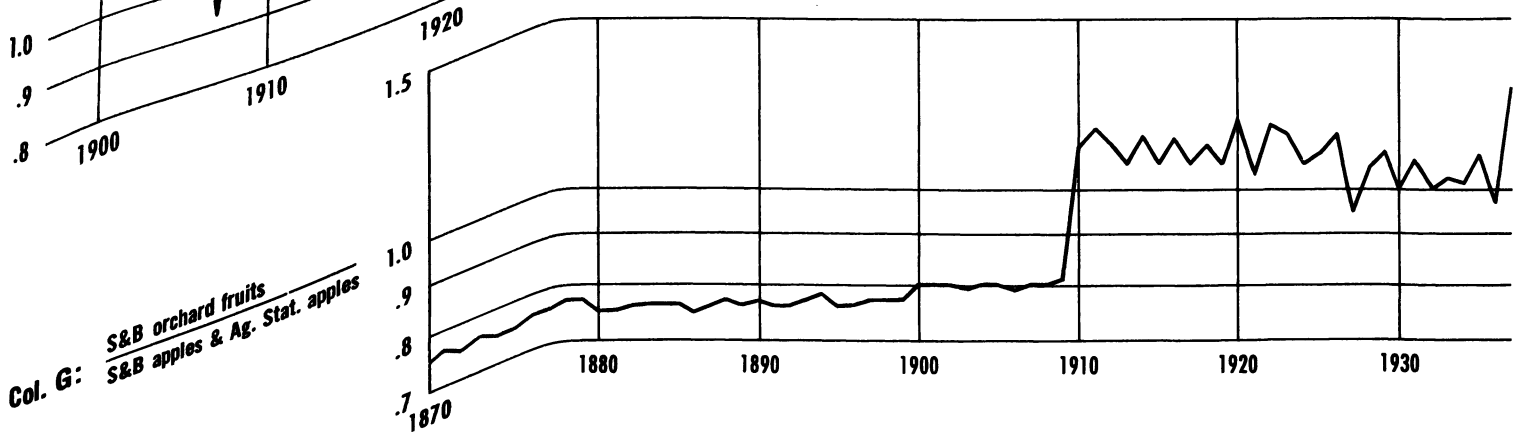
Other Fruits. The Strauss & Bean orchard fruits price (Col. F) and orchard, citrus fruits, and grapes price (not shown) are based on the relative movements of the estimated apples price for the period 1870 through 1909 and on a BAE season average price for apples for 1910 through 1937. The chart for Col. G shows the ratio of the orchard fruits price to the apples price.

There is a strong similarity of relative movement for most years, except for the outstanding difference between 1909 and 1910 which is maintained during the balance of the period. For these two years, Strauss and Bean show an increase in the price of orchard fruits of 43%. The AMS series, Col. B, shows an increase in the price of apples of 2%. Barger & Landsberg, Col. D, shows an increase of 2%. The wholesale monthly average prices for apples at New York show the following changes, 1909 to 1910, for the months September through December, respectively: —6%, —13%, —2%, and +12% (*Ag. Yearbook 1923*, Table 201, compiled from the "American Agriculturalist"). Series in Barger and Landsberg, Table A-1, show the following 1909-1910 changes: peaches, +20%; pears, +13%; and plums, 0%. Changes in prunes and cherries, the other two Strauss & Bean orchard fruits, are not available. In 1909, according to Strauss & Bean, the value of orchard fruits other than apples was 41% of the total. In other words, there is no evidence to support the increase in orchard fruits price of 43% between 1909 and 1910 which is maintained throughout the balance of the period.

Part of the difference is due to an adjustment made by Strauss and Bean to bring in the other fruits and other states. "The price data, corrected for the price differential of fruits other than apples which include the three states only, are apparently not representative for the total United States. The census gives for some years both value and volume data for total orchard production. According to these data, the price series here used is too high and calls for downward adjustments: 26.3 per cent in 1899 and 22.6 per cent in 1909 . . . . Since 1909, the BAE weighted season-average price of apples was used as given in publications of the United States Department of Agriculture. This price had to be raised 3.5 per cent from 1909 to 1918 to adjust for the difference in the price of apples and of fruits other than apples." The balance of the difference may be due to recent revisions in the apple price series for 1910 and the years following. (The 1923 *Ag. Yearbook* gives the season average farm price for apples in 1910 as \$.856 per bushel.)

In view of the significant difference in estimates of movement between 1909 and 1910, it is felt that the orchard fruits price series and the orchard fruits, citrus fruits, and grapes price series of Strauss & Bean should not be used.





AP-16. ORANGES: Price

AP-16 (Oranges), SOURCES

COL. A

1909-1947. AMS Stat. Bull. 180, p. 26, season average farm price of oranges and tangerines per box.

1948-1957. *Ag. Stat. 1959*, Table 248.

AP-16, NOTES

This series is a weighted average price for oranges and tangerines; tangerine prices ran 10-50% higher than orange prices after 1943, but showed no regular difference in 1929-42 (see *Ag. Stat. 1952*, p. 215, and *Ag. Stat. 1959*, p. 174). Tangerine output rose from about 2% of orange output to about 4% between 1919 and 1957.

	Season average farm price ($ per box)
	A
1909	1.03
1910	1.18
1911	1.24
1912	1.45
1913	1.01
1914	1.09
1915	1.47
1916	1.33
1917	3.45
1918	2.81
1919	3.11
1920	1.85
1921	2.94
1922	1.95
1923	1.44
1924	2.85
1925	2.66
1926	2.52
1927	3.73
1928	1.63
1929	3.61
1930	1.35
1931	1.22
1932	.88
1933	1.39
1934	1.15
1935	1.51
1936	1.75
1937	.83
1938	.76
1939	.95
1940	1.18
1941	1.56
1942	2.47
1943	2.64
1944	2.69
1945	2.93
1946	1.55
1947	1.30
1948	1.74
1949	2.22
1950	1.97
1951	1.51
1952	1.72
1953	1.94
1954	1.91
1955	2.40
1956	2.06
1957	3.06

AP-17. SUGARCANE: Price

	N.Y. wholesale price, raw sugar ($ per ton)	Farm price, sugarcane ($ per ton)	Col. B / Col. A	Preferred series, average price ($ per ton)
	A	B	C	D
1870	230			10.5
1871	216			9.9
1872	206			9.4
1873	191			8.8
1874	183			8.4
1875	183			8.4
1876	185			8.5
1877	188			8.6
1878	165			7.6
1879	148			6.8
1880	164			7.5
1881	165			7.6
1882	156			7.1
1883	148			6.8
1884	117			5.4
1885	115			5.2
1886	107			4.9
1887	105			4.8
1888	115			5.3
1889	129			5.9
1890	110			5.0
1891	78			3.6
1892	66			3.0
1893	74			3.4
1894	64			2.9
1895	66			3.0
1896	72			3.3
1897	72			3.3
1898	84			3.8
1899	88			4.0
1900	92			4.2
1901	80			3.7
1902	70			3.2
1903	74			3.4
1904	80			3.7
1905	86			3.9
1906	74			3.4
1907	76			3.5
1908	82			3.8
1909	80	3.83	.048	3.83
1910	84	3.69	.044	3.69
1911	90	4.29	.048	4.29
1912	84	3.73	.044	3.73
1913	70	3.13	.045	3.13
1914	76	3.75	.049	3.75
1915	94.0	4.55	.048	4.55
1916	116	5.29	.046	5.29
1917	126	7.10	.056	7.10
1918	128	7.28	.057	7.28
1919	150	14.00	.093	14.00
1920	260	5.76	.022	5.76
1921	94.0	3.63	.039	3.63
1922	94.0	5.83	.062	5.83
1923	140	7.09	.051	7.09
1924	120	5.58	.046	5.58
1925	86.0	4.05	.047	4.05
1926	86.0	4.92	.057	4.92
1927	94.0	4.61	.049	4.61
1928	84.0	3.85	.046	3.85
1929	76.0	3.73	.049	3.73
1930	68.0	3.31	.049	3.31
1931	66.0	3.21	.049	3.21
1932	58.0	2.98	.051	2.98
1933	64.0	3.14	.049	3.14
1934	60.0	2.33	.039	2.33
1935	64.0	3.15	.049	3.15
1936	76.0	3.67	.048	3.67
1937	70.0	2.90	.041	2.90
1938	58.0	2.70	.047	2.70
1939	60.0	2.84	.047	2.84
1940	56.0	2.86	.051	2.86
1941	68.0	3.95	.058	3.95
1942	74.0	4.39	.059	4.39
1943	74.0	4.58	.062	4.58
1944	74.0	4.95	.067	4.95
1945	76.0	5.67	.075	5.67
1946	92.0	6.61	.072	6.61
1947	124	7.17	.060	7.17
1948	112	5.77	.052	5.77
1949	116	6.25	.054	6.25
1950	118	7.80	.066	7.80
1951	122	6.35	.052	6.35
1952	126	6.94	.055	6.94
1953	126	7.24	.057	7.24
1954	122	6.94	.057	6.94
1955	120	6.50	.054	6.50
1956	122	8.03	.066	8.03
1957	126	6.90	.055	6.90

AP-17, SOURCES

COL. A

1870-1889. Strauss & Bean, p. 77, wholesale price per ton of raw sugar, New York.

1890-1957. BLS *Wholesale Prices* Bulls., wholesale price, raw sugar at New York; 1947-57 indexes (1947-49 = 100) spliced to price at 1947.

COL. B, *Ag. Stat. 1952*, p. 102, and *1959*, p. 84, season average price received by farmers for sugarcane.

COL. C, Ratio, Col. B/Col. A.

COL. D, Preferred series

1870-1908. Col. A times the geometric mean of the ratios in Col. C for the year 1909 through 1913 (ratio, .0458).

1909-1957. Col. B, transcribed.

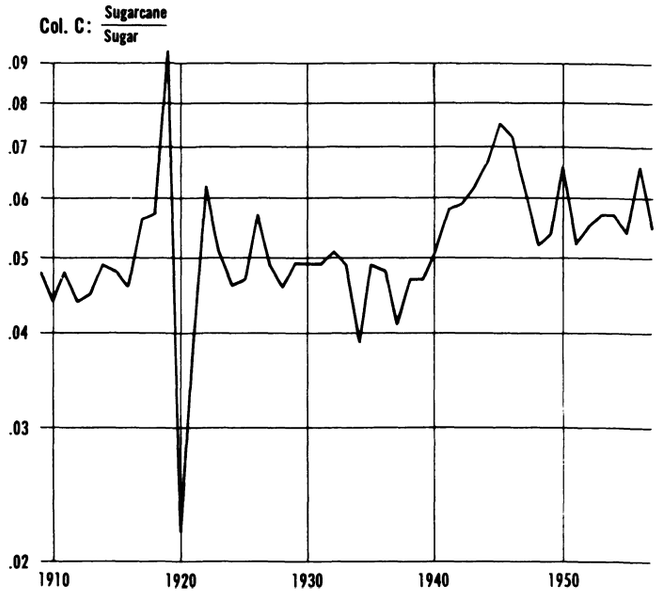
AP-17, NOTES

COL. A. The Strauss & Bean wholesale price series extends through 1918 and gives figures identical to those of the BLS series for the period of overlap, 1890 through 1918. Consequently, no overlap is shown.

Strauss & Bean used the wholesale price series to approximate a farm price for the period prior to 1911.

The use of the New York market price for raw sugar as a basis for extrapolating back farm price for sugarcane is questionable for at least two reasons. First, there was a tendency for the market prices of farm products to show more of a fall than farm prices for the period 1870 to 1910. Second, the New York wholesale market price for sugar reflects primarily the price of imported sugar.

COL. C. The chart shows the ratio of farm (cane) price to market (raw sugar) price. The rise which is discernible is presumably due to a rising average sugar content of cane (about 20% from 1919 to 1956: *Ag. Stat. 1957*, p. 97). Our use of the cane price for years after 1908 thus overstates the rise in price of a standard product. The relative price (see Chart 55 in text, *supra*) should perhaps fall 50% instead of 30% over this 38-year period.



AP-18. SUGAR BEETS: Price

AP-18 (Sugar Beets), SOURCES

COL. A, *Ag. Stat. 1952*, Table 114, and *1959*, Table 115, season average farm price, per ton.

AP-18, NOTES

Strauss & Bean has no price for sugar beets prior to 1911.

There was a slight gain (about 10%) in the production of beet sugar per ton of beets between 1909 and 1957.

	Season average farm price ($ per ton)
	A
1909	5.06
1910	5.45
1911	5.50
1912	5.82
1913	5.69
1914	5.45
1915	5.67
1916	6.12
1917	7.39
1918	10.00
1919	11.74
1920	11.63
1921	6.35
1922	7.91
1923	8.99
1924	7.95
1925	6.39
1926	7.61
1927	7.67
1928	7.11
1929	7.08
1930	7.14
1931	5.94
1932	5.26
1933	5.13
1934	5.16
1935	5.76
1936	6.05
1937	5.26
1938	4.65
1939	4.76
1940	5.11
1941	6.43
1942	6.84
1943	8.81
1944	10.60
1945	10.20
1946	11.10
1947	11.80
1948	10.60
1949	10.80
1950	11.20
1951	11.70
1952	12.00
1953	11.60
1954	10.80
1955	11.20
1956	11.90
1957	11.20

AP-19. TOBACCO: Price

	Conn. ($/lb.)	Pa. ($/lb.)	Md. ($/lb.)	Va. ($/lb.)	N.C. ($/lb.)	Ky. ($/lb.)	Conn., Type 61 ($/lb.)	N.C., Type 12 ($/lb.)	Ky., Type 31 ($/lb.)
	A	B	C	D	E	F	G	H	I
1870	.225	.210	.085	.073	.141	.082			
1871	.248	.151	.081	.107	.102	.076			
1872	.298	.144	.100	.103	.100	.083			
1873	.231	.123	.077	.093	.090	.072			
1874	.321	.150	.095	.120	.160	.124			
1875	.219	.099	.082	.084	.097	.066			
1876	.090	.089	.079	.079	.089	.069			
1877	.108	.093	.050	.052	.057	.046			
1878	.110	.100	.055	.050	.060	.050			
1879	.120	.090	.050	.050	.070	.050			
1880	.150	.100	.070	.080	.090	.070			
1881	.160	.130	.080	.086	.135	.088			
1882	.130	.120	.060	.073	.120	.080			
1883	.135	.120	.065	.080	.125	.086			
1884	.124	.105	.073	.074	.115	.075			
1885	.124	.105	.073	.074	.106	.065			
1886	.140	.118	.065	.070	.095	.060			
1887	.143	.150	.055	.080	.100	.120			
1888	.130	.110	.050	.060	.080	.080			
1889	.125	.117	.050	.065	.110	.051			
1890	.160	.135	.065	.080	.110	.065			
1891	.195	.145	.067	.070	.096	.073			
1892	.210	.130	.080	.069	.095	.083			
1893	.140	.135	.076	.062	.080	.076			
1894	.160	.090	.060	.060	.090	.055			
1895	.165	.074	.058	.080	.092	.053			
1896	.130	.080	.043	.052	.080	.042			
1897	.110	.070	.045	.050	.070	.080			
1898	.150	.080	.046	.070	.080	.040			
1899	.180	.082	.056	.059	.066	.061			
1900	.150	.060	.060	.060	.070	.060			
1901	.150	.060	.060	.080	.090	.060			
1902	.160	.060	.060	.070	.070	.060			
1903	.155	.073	.055	.061	.063	.062			
1904	.226	.089	.065	.074	.086	.064			
1905	.170	.108	.060	.076	.088	.070			
1906	.180	.137	.068	.082	.100	.077			
1907	.115	.075	.065	.105	.110	.102			
1908	.170	.105	.075	.092	.105	.091			
1909	.165	.090	.083	.085	.095	.106			
1910	.165	.093	.077	.090	.106	.087			
1911	.205	.095	.075	.096	.116	.077			
1912	.241	.085	.080	.120	.160	.087			
1913	.210	.075	.093	.139	.185	.100			
1914	.185	.085	.080	.090	.115	.084			
1915	.170	.092	.085	.094	.112	.078			
1916	.270	.142	.160	.146	.202	.127			
1917	.384	.210	.200	.265	.315	.200			
1918	.440	.140	.300	.270	.351	.263			
1919	.481	.180	.259	.438	.492	.242	1.05	.496	.340
1920	.457	.120	.178	.181	.208	.114	1.00	.196	.133
1921	.313	.144	.169	.198	.245	.180	.95	.264	.210
1922	.405	.160	.238	.255	.275	.205	.90	.273	.265
1923	.475	.181	.277	.196	.207	.155	1.00	.215	.195
1924	.293	.157	.227	.204	.226	.165	.85	.231	.201
1925	.265	.103	.237	.156	.224	.130	1.00	.254	.178
1926	.367	.105	.202	.176	.255	.106	.98	.266	.133
1927	.362	.130	.234	.179	.208	.214	1.05	.202	.263
1928	.357	.140	.272	.160	.190	.251	.93	.200	.307
1929	.365	.120	.277	.176	.185	.176	.56	.189	.214
1930	.336	.064	.266	.088	.129	.121	.73	.134	.150
1931	.230	.074	.150	.062	.088	.071	.82	.090	.086
1932	.176	.047	.168	.089	.122	.101	.59	.125	.122
1933	.229	.050	.178	.126	.160	.101	.64	.164	.107
1934	.352	.093	.175	.230	.285	.146	.80	.297	.173
1935	.360	.110	.200	.179	.203	.154	.85	.209	.189
1936	.380	.115	.254	.214	.230	.292	.88	.231	.358
1937	.340	.104	.172	.191	.240	.176	.98	.251	.204
1938	.305	.136	.185	.194	.226	.171	.60	.230	.195
1939	.351	.129	.211	.142	.153	.158	.66	.154	.177
1940	.346	.133	.330	.158	.166	.141	.83	.170	.168
1941	.445	.132	.301	.285	.292	.261	1.13	.294	.292
1942	.570	.137	.565	.384	.391	.369	1.50	.379	.420
1943	.792	.186	.453	.407	.406	.416	1.85	.403	.449
1944	.890	.197	.555	.413	.432	.413	2.20	.430	.439
1945	1.01	.341	.570	.431	.438	.381	2.20	.440	.397
1946	1.17	.326	.445	.422	.493	.373	2.40	.525	.399
1947	1.25	.304	.428	.386	.420	.460	3.10	.431	.496
1948	1.28	.262	.544	.475	.497	.438	2.90	.495	.458
1949	.996	.263	.483	.439	.481	.434	2.05	.488	.457
1950	.894	.263	.482	.528	.556	.462	2.05	.564	.489
1951	.924	.190	.448	.522	.535	.493	2.05	.551	.506
1952	.971	.252	.488	.499	.499	.491	2.10	.509	.507
1953	1.04	.275	.545	.427	.537	.507	2.05	.579	.528
1954	1.06	.274	.403	.505	.542	.485	2.15	.553	.500
1955	.997	.245	.508	.524	.533	.559	2.15	.530	.594
1956	1.21	.240	.517	.529	.518	.600	1.90	.518	.642
1957	1.44	.205	.452	.510	.552	.589	2.05	.548	.612

	U.S. ($/lb.)	Index of prices (1910-14 = 100)	Three-state average ($/lb.)	Weighted av. price, 1952-56 weights ($/lb.)	Col. M / Col. L	Col. Q / Col. J	Col. Q / Col. K (x 1000)	Preferred series ($/lb.)
	J	K	L	M	N	O	P	Q
1870	.097		.129			1.36		.132
1871	.102		.099			.99		.101
1872	.107		.102			.98		.105
1873	.086		.088			1.05		.090
1874	.137		.141			1.06		.145
1875	.077		.093			1.23		.095
1876	.073		.086			1.21		.088
1877	.054		.057			1.07		.058
1878	.058		.061			1.07		.062
1879	.061		.066			1.10		.067
1880	.081		.085			1.07		.087
1881	.096		.119			1.27		.122
1882	.085		.103			1.25		.106
1883	.088		.108			1.25		.110
1884	.081		.103			1.30		.105
1885	.075		.097			1.32		.099
1886	.072		.088			1.25		.090
1887	.105		.090			.88		.092
1888	.079		.073			.95		.075
1889	.066		.094			1.45		.096
1890	.080		.099			1.26		.101
1891	.082		.091			1.13		.093
1892	.089		.093			1.07		.095
1893	.079		.082			1.06		.084
1894	.066		.082			1.27		.084
1895	.068		.082			1.24		.084
1896	.055		.070			1.29		.071
1897	.074		.063			.86		.064
1898	.061		.071			1.18		.072
1899	.071		.064			.92		.065
1900	.067		.067			1.01		.068
1901	.072		.080			1.14		.082
1902	.069		.067			.99		.068
1903	.067		.061			.94		.063
1904	.078		.080			1.05		.082
1905	.082		.081			1.01		.083
1906	.096		.093			.99		.095
1907	.100		.095			.98		.098
1908	.102		.097			.97		.099
1909	.101		.091			.92		.093
1910	.093	84	.097			1.06	1.18	.099
1911	.093	84	.103			1.14	1.26	.106
1912	.107	102	.134			1.28	1.34	.137
1913	.128	122	.153			1.23	1.29	.157
1914	.097	108	.104			1.09	.98	.106
1915	.090	82	.103			1.18	1.29	.106
1916	.148	108	.187			1.29	1.77	.191
1917	.240	182	.277			1.18	1.56	.284
1918	.279	242	.325			1.19	1.37	.332
1919	.312	303	.410	.435	1.06	1.39	1.44	.435
1920	.173	233	.195	.179	.92	1.03	.77	.179
1921	.195	164	.218	.246	1.128	1.26	1.50	.246
1922	.228	185	.258	.267	1.035	1.17	1.44	.267
1923	.190	189	.225	.209	.929	1.10	1.11	.209
1924	.190	173	.222	.221	.995	1.16	1.28	.221
1925	.168	168	.221	.228	1.032	1.36	1.36	.228
1926	.179	170	.232	.223	.96	1.25	1.31	.223
1927	.207	164	.211	.221	1.05	1.07	1.35	.221
1928	.200	172	.210	.230	1.10	1.15	1.34	.230
1929	.183	171	.207	.194	.94	1.06	1.13	.194
1930	.128	140	.163	.139	.85	1.09	.99	.139
1931	.082	98	.104	.092	.88	1.12	.94	.092
1932	.105	84	.131	.122	.93	1.16	1.45	.122
1933	.130	107	.159	.145	.91	1.12	1.36	.145
1934	.213	156	.244	.251	1.03	1.18	1.61	.251
1935	.184	171	.197	.200	1.02	1.09	1.17	.200
1936	.236	163	.230	.262	1.14	1.11	1.61	.262
1937	.204	200	.214	.233	1.09	1.14	1.16	.233
1938	.196	173	.210	.213	1.01	1.09	1.23	.213
1939	.154	152	.168	.161	.96	1.05	1.06	.161
1940	.161	134	.210	.167	.80	1.04	1.25	.167
1941	.264	157	.286	.287	1.00	1.09	1.83	.287
1942	.369	247	.425	.382	.90	1.04	1.55	.382
1943	.405	319	.407	.412	1.01	1.02	1.29	.412
1944	.420	348	.453	.430	.95	1.02	1.24	.430
1945	.426	360	.469	.433	.92	1.02	1.20	.433
1946	.451	376	.470	.487	1.04	1.08	1.30	.487
1947	.436	374	.416	.457	1.10	1.05	1.22	.457
1948	.482	380	.497	.487	.98	1.01	1.28	.487
1949	.459	398	.469	.475	1.01	1.03	1.19	.475
1950	.517	402	.519	.533	1.03	1.03	1.33	.533
1951	.511	436	.492	.532	1.08	1.04	1.22	.532
1952	.499	432	.482	.505	1.05	1.01	1.17	.505
1953	.523	433	.525	.555	1.06	1.06	1.28	.555
1954	.511	443	.488	.534	1.09	1.04	1.21	.534
1955	.532	437	.510	.543	1.06	1.02	1.24	.543
1956	.537	452	.502	.546	1.09	1.02	1.21	.546
1957	.561	466	.505	.558	1.10	.99	1.20	.558

(Sources and Notes on next page)

AP-19. TOBACCO: Price (Continued)

AP-19, SOURCES

COL. A, Connecticut average
1870-1945. U. S. Department of Agriculture, Bureau of Agricultural Economics, *Tobaccos of the United States: Acreage, Yield per Acre, Production, Price and Value, by States 1866-1945 and by Types and Classes, 1919-1945* (prepared by John F. Marsh, John A. Hicks, and C. E. Burkhead, July 1948), Table 83. Price per lb., crop years.
1946-57. *Ag. Stat. 1948,* Table 154, tobacco, season average price per pound received by farmers, and similar tables in *Ag. Stat.* for 1949-59.

COL. B, Pennsylvania average. Marsh, Hicks, and Burkhead, *op. cit.,* Table 85.

COL. C, Maryland average. *Ibid.,* Table 93.

COL. D, Virginia average. *Ibid.,* Table 94.

COL. E, North Carolina average. *Ibid.,* Table 96.

COL. F, Kentucky average. *Ibid.,* Table 102.

COL. G, Connecticut, type 61 cigar wrapper
1919-45. *Ibid.,* Table 72.
1946-57. *Ag. Stat. 1950,* Table 155, and similar tables in *Ag. Stat. 1953, 1956,* and *1959.*

COL. H, North Carolina, type 12 cigarette tobacco. Marsh, Hicks, and Burkhead, *op. cit.,* Table 6.

COL. I, Kentucky, type 31 Burley (cigarette, pipe, and chewing) tobacco. *Ibid.,* Table 32.

COL. J, U. S. average, all tobaccos
1870-1944. *Ibid.,* Table 1.
1945-57. *Ag. Stat. 1959,* Table 151.

COL. K, Index of prices received by farmers (1910-14 = 100). *Ag. Stat. 1952,* p. 682, and *1959,* p. 477, tobacco.

COL. L, Three-state average price: Pennsylvania (weight 5), Maryland (weight 25), and North Carolina (weight 60). (Approximate 1952-56 weights, see notes.)

COL. M, Price index, 1952-56 average weights (see notes).

COL. N, Ratio, Col. M/Col. L.

COL. O, Ratio, Col. Q/Col. J.

COL. P, Ratio, Col. Q/Col. K.

COL. Q, Preferred series
1870-1918. COL. L, linked to COL. M by 1921-25 average ratio (ratio, 1.024).
1919-57. COL. M, transcribed.

AP-19, NOTES

Because of the wide variety in qualities and prices of tobacco, an average value per pound is open to question as an indicator of price. However, prices for specific kinds at specific locations are available only for the years since 1919.

As prices by states are available for the years since 1866, we show some of the more important and some of the least diversified of the state series. After 1919—

Connecticut grew principally cigar-binder tobaccos (types 51 and 52), but with an increasing proportion of high priced cigar wrapper (type 61)—11% in 1919, 28% in 1945, over 50% in 1956.

Pennsylvania grew almost exclusively cigar filler (type 41).

Maryland grew nothing but air cured cigarette tobacco (type 32).

Virgina grew principally (65% or more) flue cured cigarette tobacco, but the remainder shifted from being chiefly the somewhat cheaper fire cured type 21 to the equally expensive air cured type 31. This shift accounted for a rise in the Virginia average of perhaps 8-10% between the early 1920's and the 1950's.

North Carolina (which grew only about 5% of the nation's total of all tobaccos in the early 1870's, but grew 25% by the 1920's and 40% by the 1950's) grew almost exclusively the flue cured cigarette tobaccos (types 11-13), all of which had closely similar prices, as can be judged by comparing the North Carolina average with the type 12 price (Cols. E and H of this table).

Kentucky grew principally type 31 (Burley) cigarette tobacco, but this variety increased its proportion of the total in Kentucky from a little over half in the early 1920's to over 90% in the 1950's. Type 31 displaced the somewhat cheaper types 22-24 and 35-36, thereby causing a rise in the Kentucky average relative to the Burley price, as can be seen by comparison of Cols. F and I.

These facts point to Pennsylvania, Maryland, and North Carolina as the states whose average prices should represent the most nearly homogeneous, unchanging quality, and therefore the best guide to the price of tobacco for the country as a whole, for the period 1870-1918. Our index (Cols. L and Q) represents an average of these three state averages, weighted 5, 25, and 60, representing the approximate 1952-56 ratios to total tobacco output of cigar, light air cured, and all flue cured tobacco outputs, respectively. An alternative index, with weights of 10, 25, and 50, representing the same tobacco classes in their 1927-31 proportions, moves in almost exactly the same way, but with 8% less rise between 1870-74 and 1919-23.

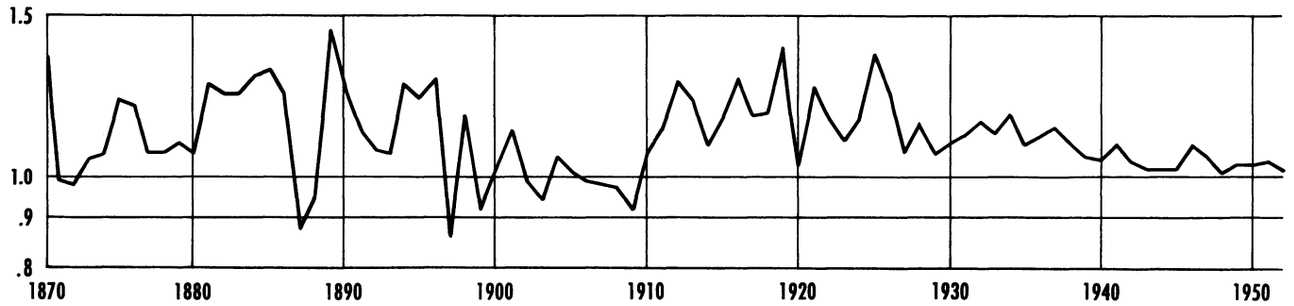
For 1919-57, for which there are prices for specified types of tobacco, our index is composed of average prices of important types, weighted by the outputs of these and similar types in 1952-56, as follows (see Worksheet 1):

	Weighted by 1952-56 U. S. output of types:
Type 12, North Carolina	11-14
Type 22, Tennessee	21-24
Type 31, Kentucky	31
Type 35, Kentucky	35-36
Type 41, Pennsylvania	41-44
Type 54, Wisconsin	54-55
Type 61, Connecticut	61-62

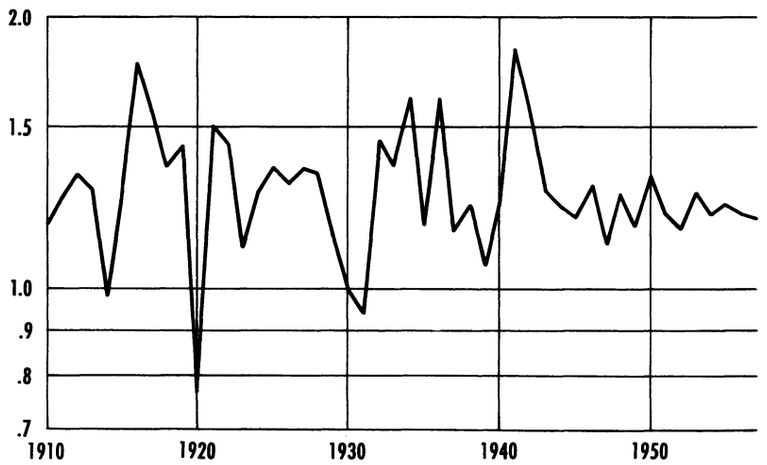
The types not covered here (types 32, 37, 51, 52, and 53) have somewhat different movements from those we have covered, but the differences have a tendency to cancel out, and aggregate output of these types in 1952-56 was only 3% of total output of tobacco. An index with 1927-31 weights shows nearly identical movements (difference in movement from 1919-23 to 1953-57 less than 1%).

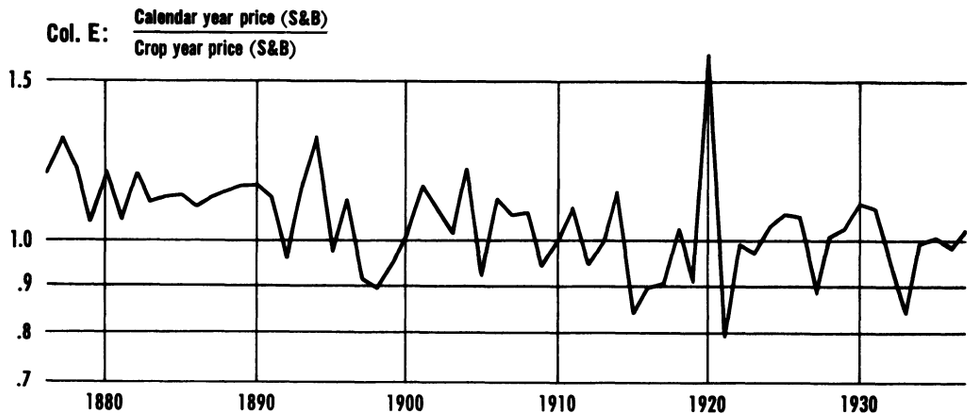
As will be seen from Col. N, this refined average is paralleled fairly closely by our three-state average index during the period (1919-57) in which we have both.

Col. O: Preferred series / U.S. average



Col. P: Preferred series / AMS price index





AP-19, WORKSHEET 1. TOBACCO: Price by Types

(weighted by 1952-56 average outputs; $ million)

	N.C., Type 12	Tenn., Type 22	Ky., Type 31	Ky., Type 35	Pa., Type 41	Wisc., Type 54	Conn., Type 61	Total	Average ($)
1952-56 average outputs (mil. lb.)	1371.5	61.027	571.71	28.536	51.261	21.206	15.752	2121 Total / 2185 All U.S. = 97%	
	A	B	C	D	E	F	G	H	I
1919	680.3	13.36	194.4	4.138	9.227	4.241	16.54	922.2	.435
1920	268.8	7.99	76.04	2.140	6.049	2.672	15.75	379.4	.179
1921	362.1	12.21	120.1	3.596	7.330	1.421	14.96	521.7	.246
1922	374.4	10.98	151.5	3.767	8.099	2.757	14.18	565.7	.267
1923	294.9	7.93	111.5	2.854	9.227	1.824	15.75	444.0	.209
1924	316.8	10.74	114.9	3.282	7.997	2.036	13.39	469.1	.221
1925	348.4	7.14	101.8	2.511	5.126	2.460	15.75	483.2	.228
1926	364.8	5.98	76.04	1.912	5.280	2.714	15.44	472.2	.223
1927	277.0	11.96	150.4	3.139	6.613	2.969	16.54	468.6	.221
1928	274.3	9.89	175.5	3.624	7.125	2.905	14.65	488.0	.230
1929	259.2	9.28	122.3	3.025	6.151	2.842	8.821	411.6	.194
1930	183.8	6.96	85.76	1.998	3.281	2.078	11.50	295.4	.139
1931	123.4	3.66	49.17	.970	3.793	1.188	12.92	195.1	.092
1932	171.4	4.21	69.75	1.398	2.409	.954	9.294	259.4	.122
1933	224.9	6.59	61.17	1.998	2.563	1.166	10.08	308.5	.145
1934	407.3	6.59	98.91	1.998	4.767	1.272	12.60	533.4	.251
1935	286.6	6.22	108.1	2.311	5.639	1.400	13.39	423.7	.200
1936	316.8	8.48	204.7	4.737	5.895	1.696	13.86	556.2	.262
1937	344.2	7.45	116.6	2.112	5.331	2.227	15.44	493.4	.233
1938	315.4	5.31	111.5	1.627	6.971	1.484	9.451	451.7	.213
1939	211.2	7.20	101.2	1.912	6.613	2.290	10.40	340.8	.161
1940	233.2	6.53	90.33	2.226	6.818	1.803	13.07	354.0	.167
1941	403.2	9.09	166.9	3.310	6.766	2.036	17.80	609.1	.287
1942	519.8	10.98	240.1	4.537	7.023	3.435	23.63	809.5	.382
1943	552.7	14.28	256.7	7.134	9.535	4.771	29.14	874.3	.412
1944	589.7	15.56	251.0	6.221	10.098	5.089	34.65	912.3	.430
1945	603.5	20.02	227.0	7.105	17.43	7.995	34.65	917.7	.433
1946	720.0	16.78	228.1	6.364	16.66	7.358	37.80	1033.1	.487
1947	591.1	18.98	283.6	7.448	15.63	4.729	48.83	970.3	.457
1948	678.9	20.38	261.8	8.504	13.48	4.750	45.68	1033.5	.487
1949	669.3	19.22	261.3	7.933	13.53	4.835	32.29	1008.4	.475
1950	773.5	19.89	279.6	6.620	13.53	4.983	32.29	1130.4	.533
1951	755.7	25.94	289.3	9.816	9.740	5.365	32.29	1128.2	.532
1952	698.1	24.29	289.9	9.217	12.92	4.135	33.08	1071.6	.505
1953	794.1	21.85	301.9	7.448	14.10	5.153	32.29	1176.8	.555
1954	758.4	25.63	285.9	9.702	14.05	5.153	33.87	1132.7	.534
1955	726.9	25.39	339.6	9.417	12.56	4.856	33.87	1152.6	.543
1956	710.4	23.43	367.0	10.244	12.30	5.535	29.93	1158.8	.546
1957	751.6	22.52	349.9	10.473	10.51	6.595	32.29	1183.9	.558

AP-20. COTTON: Price

	Strauss & Bean, calendar year, farm price (¢ per lb.)	Ag. Stat., market price (¢ per lb.)	AMS 5/56, index (1910-14 = 100)	American upland, season av. spot price, middling 7/8 in.	Col. A / Col. G	Col. D / Col. G	Preferred series, farm price (¢ per lb.)
	A	B	C	D	E	F	G
1870	18.0						
1871	17.6						
1872	20.2						
1873	17.3						
1874	15.1						
1875	13.6						
1876	11.6				1.19		9.71
1877	11.2				1.31		8.53
1878	9.8				1.20		8.16
1879	10.7				1.04		10.28
1880	11.7				1.19		9.83
1881	11.2				1.05		10.66
1882	10.8				1.18		9.12
1883	10.0				1.10		9.13
1884	10.3				1.12		9.19
1885	9.5				1.13		8.39
1886	8.8				1.09		8.06
1887	9.5				1.11		8.55
1888	9.6				1.13		8.50
1889	9.8	10.69			1.15		8.55
1890	9.9	9.08			1.15		8.59
1891	8.1	7.28			1.12		7.24
1892	8.0	8.15			.959		8.34
1893	8.0	7.30			1.14		7.00
1894	6.0	5.86			1.31		4.59
1895	7.4	7.68			.971		7.62
1896	7.4	7.28			1.11		6.66
1897	6.1	5.84			.913		6.68
1898	5.1	5.46			.890		5.73
1899	6.6	8.03			.946		6.98
1900	9.3				1.02		9.15
1901	8.1	8.40			1.15		7.03
1902	8.2	9.64			1.08		7.60
1903	10.6	12.49			1.01		10.49
1904	10.8	8.70			1.20		8.98
1905	9.9	10.97			.918		10.78
1906	10.7	10.92			1.12		9.58
1907	11.1	11.41			1.07		10.36
1908	9.7	9.80			1.08		9.01
1909	12.7	14.33			.939		13.52
1910	13.9	14.65	118		.996		13.96
1911	10.5	10.85	105		1.09		9.65
1912	10.9	12.20	90		.948		11.50
1913	12.5	13.12	101		1.00		12.47
1914	8.4		86		1.14		7.35
1915	9.5	11.68	76	11.72	.847	1.044	11.22
1916	15.6	18.84	116	18.92	.899	1.090	17.36
1917	24.4	28.96	185	29.01	.901	1.071	27.09
1918	29.7	29.87	247	29.77	1.03	1.031	28.88
1919	32.1	38.21	252	38.34	.908	1.085	35.34
1920	25.4	16.55	262	16.66	1.60	1.048	15.89
1921	13.5	17.92	106	18.09	.794	1.064	17.00
1922	20.8	25.94	162	25.84	.909	1.129	22.88
1923	28.0	30.33	227	30.14	.976	1.051	28.69
1924	23.9	24.21	226	24.23	1.04	1.058	22.91
1925	20.9	19.71	186	19.68	1.07	1.003	19.62
1926	13.3	14.74	127	14.40	1.06	1.153	12.49
1927	17.9	19.98	134	19.72	.886	.976	20.20
1928	18.1	18.98	156	18.67	1.01	1.038	17.98
1929	17.4	16.16	150	15.78	1.04	.940	16.78
1930	10.4	10.08	104	9.61	1.10	1.016	9.46
1931	6.1	6.20	64	5.89	1.08	1.041	5.66
1932	6.1	7.26	49	7.15	.936	1.097	6.52
1933	8.6	10.92	68	10.81	.846	1.063	10.17
1934	12.3	12.44	101	12.36	.995	1.000	12.36
1935	11.2	11.65	98	11.55	1.01	1.041	11.09
1936	12.2	12.79	99	12.70	.987	1.028	12.36
1937	8.7	8.79	94	8.66	1.03	1.030	8.41
1938		8.73	70	8.70		1.011	8.60
1939		10.03	74	9.90		1.089	9.09
1940		11.06	83	10.79		1.091	9.89
1941		18.17	111	17.94		1.053	17.03
1942		19.96	156	19.22		1.009	19.04
1943		20.44	167	19.56		.984	19.88
1944		21.69	172	20.60		.994	20.73
1945		25.82	179	24.39		1.083	22.52
1946		34.55	238	33.33		1.021	32.64
1947		34.41	274	32.38		1.014	31.93
1948		31.94	272	30.04		.989	30.38
1949		31.60	246	30.30		1.060	28.58
1950		42.30	282	41.35		1.032	40.07
1951		39.37	336	38.36		1.013	37.88
1952		34.40	310				34.59
1953		33.35	268				32.25
1954		33.96	274				33.61
1955		34.28	272				32.40
1956	33.64	32.64	268				31.75
1957	34.50	33.12	263				29.50

AP-20, SOURCES

Col. A, Strauss & Bean, Table 25, calendar year, farm price.

Col. B, *Ag. Stat. 1952*, Table 84, and *Ag. Stat. 1956*, Table 75, market price per pound at New Orleans, for years beginning August 1; *Ag. Stat. 1958*, p. 56.

Col. C, *Ag. Prices*, May 1956, Supplement No. 1, p. 42, farm price, calendar year. *Ag. Prices*, Feb. 1959, Supplement No. 1, p. 40.

Col. D, *Ag. Stat. 1952*, p. 89.

Col. E, Ratio, Col. A/ Col. G.

Col. F, Ratio, Col. D/ Col. G.

Col. G, Preferred series. *Ag. Stat. 1952*, Table 84, and *Ag. Stat. 1958*, Table 77, December 1 price, 1876-1907, season average thereafter: farm price.

AP-20, NOTES

On the whole, the market price series (Cols. B and D) show remarkably close correspondence to the farm price (Col. G).

Col. E. The ratio of Strauss & Bean calendar year to crop year prices for cotton is shown in the chart on the opposite page (S & B figures are same as USDA's for this period). The Strauss & Bean calendar year prices for 1870-1909 were based on wholesale prices at New Orleans weighted by monthly marketings. The decrease in Col. A relative to Col. G from the 1880's to the 90's and later years may be due to a decrease in transportation charges not allowed for by Strauss and Bean in the calendar year series (a fall in cost of transportation would diminish the difference between average farm price and New Orleans price).

AP-21. OIL-BEARING CROPS: Price

(1910-14 = 100)

	Flaxseed, farm price	Cottonseed, farm price	Peanuts, farm price	Col. A x 2.00	Col. B x 6.00	Col. C x 2.00	Farm price, $\frac{D+E+F}{10}$	AMS, oil-bearing crops price	$\frac{\text{Col. G}}{\text{Col. H}}$	Preferred series, average farm price
	A	B	C	D	E	F	G	H	I	J
1870	98.8		228	198		456				
1871	94.1		232	188		464				
1872	84.6		197	169		394				
1873	84.6		183	169		366				
1874	91.7		226	183		452				
1875	89.3	109.8	187	179	659	374	121			121
1876	72.8	93.1	158	146	559	316	102			102
1877	79.3	86.5	137	159	519	274	95.2			95
1878	68.6	72.4	137	137	434	274	84.5			84
1879	68.0	79.0	114	136	474	228	83.8			84
1880	69.2	84.0	116	138	504	232	87.4			87
1881	65.1	95.1	127	130	571	254	95.5			95
1882	65.7	92.1	166	131	553	332	102			102
1883	69.8	84.5	183	140	507	366	101			101
1884	72.2	72.9	147	144	437	294	87.5			87
1885	69.8	64.8	93.4	140	389	187	71.6			72
1886	58.6	62.8	102	117	377	204	69.8			70
1887	57.4	68.8	93.4	115	413	187	71.5			71
1888	71.0	83.5	108	142	501	216	85.9			86
1889	72.2	67.3	137	144	404	274	82.2			82
1890	79.3	64.8	133	159	389	266	81.4			81
1891	55.6	64.8	87.2	111	389	174	67.4			67
1892	49.7	61.2	78.8	99.4	367	158	62.4			62
1893	52.7	66.3	78.8	105	398	158	66.1			66
1894	67.5	53.1	62.2	135	319	124	57.8			58
1895	52.1	48.1	70.6	104	289	141	53.4			53
1896	39.1	53.1	78.8	78.2	319	158	55.5			55
1897	46.2	44.5	64.3	92.4	267	129	48.8			49
1898	53.3	40.5	66.4	107	243	133	48.3			48
1899	57.4	54.7	78.8	115	328	158	60.1			60
1900	86.4	65.3	72.6	173	392	145	71.0			71
1901	78.7	67.3	66.4	157	404	133	69.4			69
1902	81.1	72.4	78.8	162	434	158	75.4			75
1903	54.4	75.9	83.0	109	455	166	73.0			73
1904	59.2	71.4	106	118	428	212	75.8			76
1905	63.3	69.8	93.4	127	419	187	73.3			73
1906	59.8	80.5	91.3	120	483	183	78.6			79
1907	62.7	86.0	102	125	516	204	84.5			84
1908	64.5	80.5	85.1	129	483	170	78.2			78
1909	85.8	102.7	91.3	172	616	183	97.1			97
1910	123	132.1	102	246	793	204	124	120	1.03	120
1911	128	88.6	99.6	256	532	199	98.7	106	.931	106
1912	100	91.6	99.6	200	550	199	94.9	90	1.05	90
1913	69.2	110.3	99.6	138	662	199	99.9	93	1.07	93
1914	78.7	77.4	99.6	157	464	199	82.0	91	.901	91
1915	94.7	146.3	93.4	189	878	187	125	106	1.18	106
1916	119	228	93.4	238	1368	187	179	155	1.15	155
1917	168	322	112	336	1932	224	249	224	1.11	224
1918	212	331	110	424	1986	220	263	257	1.02	257
1919	240	334	170	480	2004	340	282	261	1.08	261
1920	207	156	112	414	936	224	157	208	.755	208
1921	88.8	139	83.0	178	834	166	118	95	1.24	95
1922	123	152	104	246	912	208	137	138	.993	138
1923	140	208	127	280	1248	254	178	176	1.01	176
1924	129	169	122	258	1014	244	152	158	.962	158
1925	144	162	97.5	288	972	195	146	147	.993	147
1926	122	113	89.2	244	678	178	110	116	.948	116
1927	116	167	106	232	1002	212	145	124	1.17	124
1928	116	172	106	232	1032	212	148	147	1.01	147
1929	146	159	85.1	292	954	170	142	143	.993	143
1930	125	113	72.6	250	678	145	107	111	.964	111
1931	72.8	46.1	47.7	146	277	95.4	51.8	73	.710	73
1932	57.4	52.1	33.2	115	313	66.4	49.4	44	1.12	44
1933	78.1	63.8	54.0	156	383	108	64.7	57	1.14	57
1934	98.2	164	66.4	196	984	133	131	103	1.27	103
1935	89.9	156	66.4	180	936	133	125	127	.984	127
1936	101	168	76.8	202	1008	154	136	120	1.13	120
1937	112	103	70.6	224	618	141	98.3	129	.762	129
1938								95		95
1939								96		96
1940								103		103
1941								138		138
1942								183		183
1943								202		202
1944								222		222
1945								228		228
1946								260		260
1947								363		363
1948								351		351
1949								242		242
1950								376		376
1951								339		339
1952								296		296
1953								279		279
1954								304		304
1955								249		249
1956								255		255
1957								244		244

AP-21, SOURCES

COL. A, Strauss & Bean, Table 23, flaxseed, farm price, calendar-year series made relative to 1910-14=100 (ratio, 59.17).

COL. B, *Ibid.*, Table 26, cottonseed, farm price, calendar-year series made relative to 1910-14=100 (ratio, 5.061).

COL. C, *Ibid.*, Table 38, peanuts, farm price, calendar-year series made relative to 1910-14=100 (ratio, 20.75).

COLS. D, E, F, Cols. A, B, C, times 2, 6, and 2 respectively.

COL. G, The sum of Cols. D, E, F divided by 10—calendar-year farm price index, 1910-14=100.

COL. H, *Ag. Prices,* May 1956, Supplement No. 1, p. 44, index numbers of prices received by farmers, oil-bearing crops. *Ag. Prices,* February 1959, p. 41.

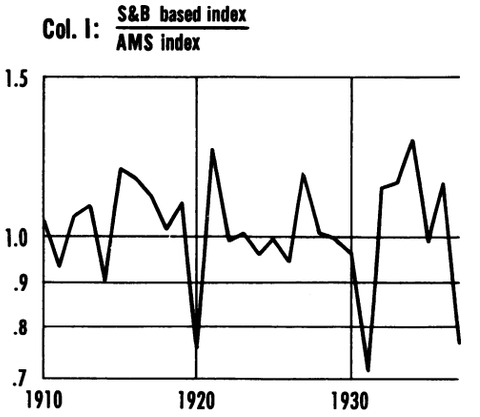
COL. I, Ratio, Col. G/Col. H.

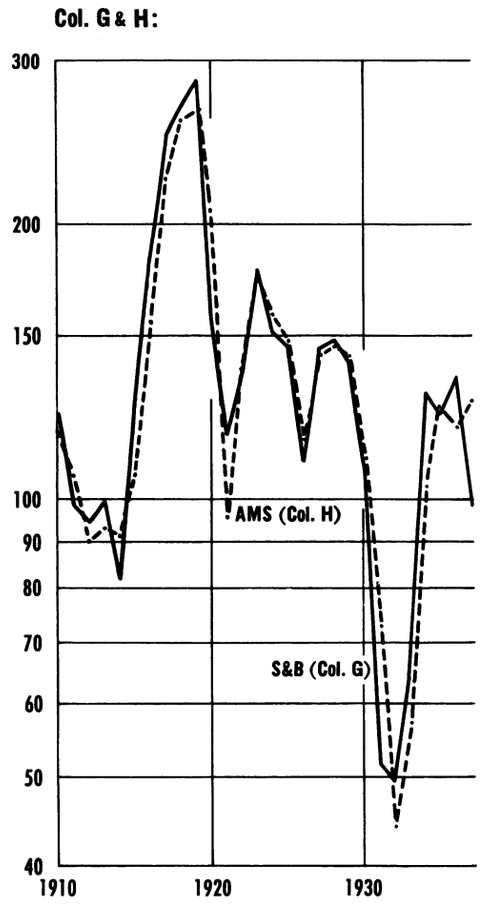
COL. J, Preferred series
1875-1909, Col. G, transcribed.
1910-57, Col. H, transcribed.

AP-21, NOTES

COL. G. Flaxseed, cottonseed, peanuts, and soybeans are the components of the current AMS price index for oil-bearing crops. Soybeans were of negligible importance prior to 1910-14 and were not included in the AMS index until 1935. The average gross farm income from these crops for 1910-14, according to Strauss & Bean, was $139 million. Flaxseed, cottonseed, and peanuts made up roughly 20%, 60%, and 20% respectively of this average. These weights were used in combining the three series to compute a price index for oil-bearing crops.

COL. I. The smaller chart shows the ratio of the computed price index to the AMS index for the period of overlap, 1910-37. The second chart shows the movements of the original series and illustrates the severity of fluctuations in absolute price of oil-crops. Although the index based on Strauss & Bean appears to be slightly higher than the AMS index, the severity of the fluctuations of the ratio makes it difficult to obtain an average difference by which the former series could be adjusted although it clearly fluctuates about 1.00. Consequently, the two series have been linked without adjustment.





AP-22. COTTONSEED: Price

	S&B, farm prices, crop year ($ per ton)	AMS 180, farm price, crop year ($ per ton)	Col. B / Col. A	Col. A x 1.093	Preferred series, farm price ($ per ton)
	A	B	C	D	E
1874	20.2			22.1	22.1
1875	21.9			23.9	23.9
1876	17.3			18.9	18.9
1877	17.3			18.9	18.9
1878	13.8			15.1	15.1
1879	15.7			17.2	17.2
1880	17.0			18.6	18.6
1881	19.0			20.8	20.8
1882	18.1			19.8	19.8
1883	16.4			17.9	17.9
1884	14.0			15.3	15.3
1885	12.6			13.8	13.8
1886	12.2			13.3	13.3
1887	13.9			15.2	15.2
1888	17.1			18.7	18.7
1889	12.5			13.7	13.7
1890	12.9			14.1	14.1
1891	12.8			14.0	14.0
1892	11.8			12.9	12.9
1893	13.3			14.5	14.5
1894	9.9			10.8	10.8
1895	9.4			10.3	10.3
1896	10.7			11.7	11.7
1897	8.5			9.3	9.3
1898	8.0			8.7	8.7
1899	11.4			12.5	12.5
1900	13.3			14.5	14.5
1901	13.3			14.5	14.5
1902	14.5			15.8	15.8
1903	15.2			16.6	16.6
1904	13.8			15.1	15.1
1905	13.8			15.1	15.1
1906	16.4			17.9	17.9
1907	17.2			18.8	18.8
1908	15.6			17.1	17.1
1909	21.6	24.30	1.125	23.6	24.30
1910	24.4	26.10	1.070	26.7	26.10
1911	15.7	17.20	1.096	17.2	17.20
1912	16.8	18.40	1.095	18.4	18.40
1913	20.4	22.00	1.078	22.3	22.00
1914	14.3	15.50	1.084	15.6	15.50
1915	28.2	30.10	1.07	30.8	30.10
1916	43.2	45.60	1.06	47.2	45.60
1917	61.7	64.30	1.04	67.4	64.30
1918	61.5	65.20	1.06	67.2	65.20
1919	61.0	65.80	1.08	66.7	65.80
1920	22.4	25.60	1.14	24.5	25.60
1921	24.7	29.10	1.18	27.0	29.10
1922	27.2	30.40	1.12	29.7	30.40
1923	37.5	41.20	1.10	41.0	41.20
1924	30.9	33.30	1.08	33.8	33.30
1925	29.2	31.60	1.08	31.9	31.60
1926	20.7	22.00	1.06	22.6	22.00
1927	31.9	34.80	1.09	34.9	34.80
1928	32.0	34.20	1.07	35.0	34.20
1929	29.0	30.90	1.07	31.7	30.90
1930	19.7	22.00	1.12	21.5	22.00
1931	8.0	8.97	1.12	8.7	8.97
1932	8.7	10.30	1.18	9.5	10.30
1933	11.7	12.90	1.10	12.8	12.90
1934	29.8	33.00	1.11	32.6	33.00
1935	27.5	30.50	1.11	30.1	30.50
1936	31.4	33.40	1.06	34.3	33.40
1937	19.4	19.50	1.01	21.2	19.50
1938		21.80			21.80
1939		21.20			21.20
1940		21.70			21.70
1941		47.60			47.60
1942		45.60			45.60
1943		52.10			52.10
1944		52.70			52.70
1945		51.10			51.10
1946		72.00			72.00
1947		85.90			85.90
1948		67.20			67.20
1949		43.40			43.40
1950		86.60			86.60
1951		69.30			69.30
1952		69.60			69.60
1953		52.70			52.70
1954		60.30			60.30
1955		44.60			44.60
1956		53.40			53.40
1957		51.10			51.10

AP-22, SOURCES

Col. A, Strauss & Bean, Table 26, farm price, crop year.

Col. B

1909-55. AMS Stat. Bull. 180, Table 11, p. 13, cottonseed, prices received by farmers (season average).

1956-57. *Ag. Stat. 1959*, Table 166.

Col. C, Ratio, Col. B/Col. A.

Col. D, Col. A times the average of the 1909-13 ratios found in Col. C (ratio, 1.093).

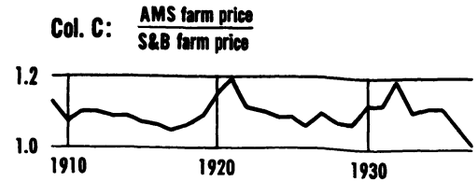
Col. E, Preferred series

1874-1908. Col. D, transcribed.

1909-57. Col. B, transcribed.

AP-22, NOTES

There is no readily available explanation for the difference in level of the two series represented by the Col. C chart. The two have been linked on the basis of the ratios for 1909 through 1913.



AP-23. SOYBEANS: Price

	Farm price, crop year average ($ per bu.)
	A
1924	2.50
1925	2.34
1926	2.00
1927	1.80
1928	1.86
1929	1.86
1930	1.34
1931	.481
1932	.529
1933	.917
1934	.963
1935	.714
1936	1.25
1937	.837
1938	.664
1939	.802
1940	.892
1941	1.55
1942	1.60
1943	1.81
1944	2.05
1945	2.08
1946	2.57
1947	3.33
1948	2.27
1949	2.16
1950	2.47
1951	2.73
1952	2.72
1953	2.72
1954	2.47
1955	2.22
1956	2.18
1957	2.07

AP-23, SOURCES

COL. A, AMS Stat. Bull. 180, Table 12, p. 14, soybean farm price, crop year; *Ag. Stat. 1959*, p. 136.

AP-24. PEANUTS: Price

	AMS, farm price, season average (¢ per lb.)	S & B, farm price, calendar year (¢ per lb.)	Col. A / Col. B	Col. B × .8941	Preferred series, farm price (¢ per lb.)
	A	B	C	D	E
1870		11.0		9.8	9.8
1871		11.2		10.0	10.0
1872		9.5		8.5	8.5
1873		8.8		7.9	7.9
1874		10.9		9.7	9.7
1875		9.0		8.0	8.0
1876		7.6		6.8	6.8
1877		6.6		5.9	5.9
1878		6.6		5.9	5.9
1879		5.5		4.9	4.9
1880		5.6		5.0	5.0
1881		6.1		5.5	5.5
1882		8.0		7.2	7.2
1883		8.8		7.9	7.9
1884		7.1		6.3	6.3
1885		4.5		4.0	4.0
1886		4.9		4.4	4.4
1887		4.5		4.0	4.0
1888		5.2		4.6	4.6
1889		6.6		5.9	5.9
1890		6.4		5.7	5.7
1891		4.2		3.8	3.8
1892		3.8		3.4	3.4
1893		3.8		3.4	3.4
1894		3.0		2.7	2.7
1895		3.4		3.0	3.0
1896		3.8		3.4	3.4
1897		3.1		2.8	2.8
1898		3.2		2.9	2.9
1899		3.8		3.4	3.4
1900		3.5		3.1	3.1
1901		3.2		2.9	2.9
1902		3.8		3.4	3.4
1903		4.0		3.6	3.6
1904		5.1		4.6	4.6
1905		4.5		4.0	4.0
1906		4.4		3.9	3.9
1907		4.9		4.4	4.4
1908		4.1		3.7	3.7
1909	4.09	4.4	.930	3.9	4.09
1910	4.01	4.9	.818	4.4	4.01
1911	4.21	4.8	.877	4.3	4.21
1912	4.43	4.8	.923	4.3	4.43
1913	4.47	4.8	.931	4.3	4.47
1914	4.19	4.8	.873	4.3	4.19
1915	4.11	4.5	.913	4.0	4.11
1916	4.84	4.5	1.1	4.0	4.84
1917	7.04	5.4	1.3	4.8	7.04
1918	6.52	5.3	1.2	4.7	6.52
1919	9.35	8.2	1.1	7.3	9.35
1920	4.69	5.4	.87	4.8	4.69
1921	3.82	4.0	.96	3.6	3.82
1922	5.36	5.0	1.1	4.5	5.36
1923	6.45	6.1	1.1	5.5	6.45
1924	5.78	5.9	.98	5.3	5.78
1925	4.25	4.7	.90	4.2	4.25
1926	5.01	4.3	1.2	3.8	5.01
1927	5.15	5.1	1.0	4.6	5.15
1928	4.86	5.1	.95	4.6	4.86
1929	3.69	4.1	.90	3.7	3.69
1930	3.46	3.5	.99	3.1	3.46
1931	1.59	2.3	.69	2.1	1.59
1932	1.50	1.6	.94	1.4	1.50
1933	2.82	2.6	1.1	2.3	2.82
1934	3.26	3.2	1.0	2.9	3.26
1935	3.12	3.2	.98	2.9	3.12
1936	3.72	3.7	1.0	3.3	3.72
1937	3.28	3.4	.96	3.0	3.28
1938	3.26				3.26
1939	3.39				3.39
1940	3.33				3.33
1941	4.67				4.67
1942	6.09				6.09
1943	7.12				7.12
1944	8.05				8.05
1945	8.27				8.27
1946	9.10				9.10
1947	10.1				10.1
1948	10.5				10.5
1949	10.4				10.4
1950	10.9				10.9
1951	10.4				10.4
1952	10.9				10.9
1953	11.1				11.1
1954	12.2				12.2
1955	11.8				11.8
1956	11.2				11.2
1957	10.4				10.4

AP-24, SOURCES

Col. A, AMS Stat. Bull. 180, p. 16, peanuts, prices received by farmers (season average); *Ag. Stat. 1959*, p. 129.

Col. B, Strauss & Bean, Table 38, calendar year average farm price.

Col. C, Ratio, Col. A/Col. B.

Col. D, Col. B times the geometric average of the ratios in Col. C for 1909-1915 (ratio, 0.8941).

Col. E, Preferred series

1870-1908. Col. D, transcribed.

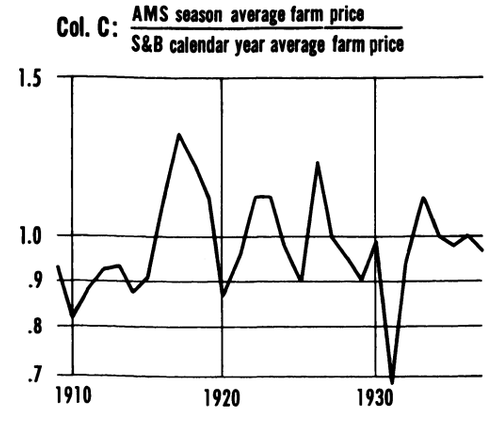
1909-57. Col. A, transcribed.

AP-24, NOTES

The Strauss & Bean estimates for peanut prices (based on relatively low unit value Virginia peanuts) were raised 29% by them to match an early series prepared by the Bureau of Agricultural Economics.

Subsequently, however, the BAE revised its own series for 1909-15 to give greater weight to the lower unit value peanuts. The ratio of the revised series to the Strauss & Bean series is shown in the chart. (The severity of the fluctuations is due to a comparison of a season average price to a calendar year average price. Unfortunately, Strauss and Bean do not give a season price and AMS has not given a long-term calendar year price.)

In order to match the revised series and to approximate a consistent long-term series, the Strauss & Bean estimates have been lowered 10.6% on the basis of the ratios for 1909-15. A certain amount of distortion is created by crop year – calendar year comparisons. During this period, however, price levels remained fairly stable and it is believed that the incomparability of the overlap periods will not result in a serious distortion of the ratio.



AP-25. FLAXSEED: Price

	Strauss & Bean, farm price, calendar year ($ per bu.)	AMS 180, farm price, crop year ($ per bu.)	Col. B / Col. A	Preferred series, farm price ($ per bu.)
	A	B	C	D
1870	1.67			1.67
1871	1.59			1.59
1872	1.43			1.43
1873	1.43			1.43
1874	1.55			1.55
1875	1.51			1.51
1876	1.23			1.23
1877	1.34			1.34
1878	1.16			1.16
1879	1.15			1.15
1880	1.17			1.17
1881	1.10			1.10
1882	1.11			1.11
1883	1.18			1.18
1884	1.22			1.22
1885	1.18			1.18
1886	.99			.99
1887	.97			.97
1888	1.20			1.20
1889	1.22			1.22
1890	1.34			1.34
1891	.94			.94
1892	.84			.84
1893	.89			.89
1894	1.14			1.14
1895	.88			.88
1896	.66			.66
1897	.78			.78
1898	.90			.90
1899	.97			.97
1900	1.46			1.46
1901	1.33			1.33
1902	1.37			1.37
1903	.92			.92
1904	1.00			1.00
1905	1.07			1.07
1906	1.01			1.01
1907	1.06			1.06
1908	1.09			1.09
1909	1.45	1.42	.979	1.42
1910	2.08	2.27	1.09	2.27
1911	2.16	1.97	.912	1.97
1912	1.69	1.29	.763	1.29
1913	1.17	1.23	1.05	1.23
1914	1.33	1.31	.985	1.31
1915	1.60	1.68	1.05	1.68
1916	2.01	2.31	1.15	2.31
1917	2.84	3.11	1.10	3.11
1918	3.59	3.57	.994	3.57
1919	4.06	4.41	1.09	4.41
1920	3.50	2.33	.666	2.33
1921	1.50	1.66	1.11	1.66
1922	2.08	2.08	1.00	2.08
1923	2.36	2.12	.898	2.12
1924	2.18	2.18	1.00	2.18
1925	2.44	2.26	.926	2.26
1926	2.07	2.03	.981	2.03
1927	1.96	1.93	.985	1.93
1928	1.96	1.94	.990	1.94
1929	2.46	2.81	1.14	2.81
1930	2.12	1.61	.759	1.61
1931	1.23	1.17	.951	1.17
1932	.97	.882	.909	.882
1933	1.32	1.63	1.23	1.63
1934	1.66	1.70	1.02	1.70
1935	1.52	1.42	.934	1.42
1936	1.71	1.90	1.11	1.90
1937	1.90	1.87	.984	1.87
1938		1.59		1.59
1939		1.46		1.46
1940		1.42		1.42
1941		1.79		1.79
1942		2.36		2.36
1943		2.83		2.83
1944		2.91		2.91
1945		2.89		2.89
1946		4.03		4.03
1947		6.15		6.15
1948		5.71		5.71
1949		3.63		3.63
1950		3.34		3.34
1951		3.71		3.71
1952		3.73		3.73
1953		3.64		3.64
1954		3.05		3.05
1955		2.90		2.90
1956		2.99		2.99
1957		2.94		2.94

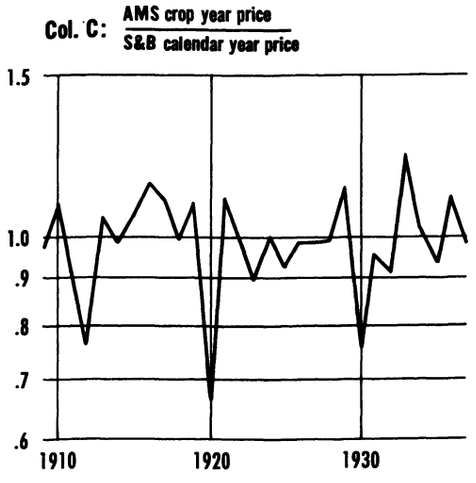
AP-25, SOURCES

COL. A, Strauss & Bean, Table 23, calendar year farm price.
COL. B, AMS Stat. Bull. 180, p. 17, crop year farm price; *Ag. Stat. 1959*, p. 123.
COL. C, Ratio, Col. B/Col. A.
COL. D, Preferred series
1870-1908. Col. A, transcribed.
1909-57. Col. B, transcribed.

AP-25, NOTES

COL. C. The ratio of the crop year price to the calendar year price is shown in the chart. The severe fluctuations are due to the differences in timing of the price movements. There is no difference in trend.

COL. D. No crop year price for flaxseed is available for the early years. The use of calendar year prices for the early period and crop year prices for the late period does not affect the long-term trend.



AP-26. LIVESTOCK AND PRODUCTS: Price

(billion dollars; 1954 output weights except as noted)

	Hogs	Beef cattle	Calves	Chickens	Eggs	Turkeys	Lambs	Milk	Wool	All livestock		
										1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I	J	K	L
1870	1.204	1.354	.177	.67	1.134		.077	2.06	.052	2.72	4.59	6.91
1871	.791	1.140	.170	.65	.918		.076	1.79	.065	2.24	3.78	5.76
1872	.665	1.084	.147	.63	.972		.094	1.78	.075	2.17	3.69	5.60
1873	.685	1.063	.197	.64	.972		.078	1.89	.063	2.20	3.77	5.74
1874	.853	1.092	.181	.58	.864		.074	2.02	.061	2.29	3.93	5.88
1875	1.084	1.082	.214	.58	.972		.076	1.71	.061	2.36	3.96	5.94
1876	1.033	1.003	.194	.58	.810		.072	1.56	.046	2.16	3.57	5.44
1877	.813	1.005	.180	.49	.756		.065	1.34	.051	1.92	3.18	4.83
1878	.561	.875	.137	.38	.648		.060	1.20	.044	1.57	2.63	4.01
1879	.558	.844	.103	.42	.702		.058	1.13	.042	1.55	2.58	3.96
1880	1.075	.918	.118	.43	.648		.059	1.42	.055	1.99	3.30	4.85
1881	.918	.983	.143	.48	.918		.069	1.57	.052	2.09	3.53	5.28
1882	1.093	1.084	.149	.51	.918		.075	1.79	.048	2.32	3.92	5.82
1883	1.009	1.116	.160	.56	.972		.075	1.47	.040	2.20	3.66	5.55
1884	.884	1.217	.157	.54	.918		.069	1.44	.034	2.12	3.51	5.40
1885	.683	1.007	.146	.45	.756		.067	1.26	.034	1.77	2.94	4.52
1886	.663	.906	.138	.40	.702		.062	1.26	.038	1.68	2.81	4.28
1887	.807	.853	.130	.42	.756		.062	1.35	.042	1.81	3.04	4.54
1888	.904	.836	.127	.45	.810		.066	1.34	.040	1.87	3.15	4.70
1889	.723	.745	.122	.47	.702		.068	1.26	.042	1.67	2.83	4.25
1890	.638	.771	.119	.50	.756		.067	1.20	.040	1.64	2.76	4.20
1891	.701	.824	.115	.51	.810		.068	1.34	.038	1.76	2.99	4.53
1892	.773	.762	.108	.50	.810		.073	1.41	.038	1.81	3.09	4.60
1893	1.004	.853	.111	.51	.864		.071	1.54	.034	2.03	3.46	5.13
1894	.771	.805	.102	.50	.702		.059	1.34	.026	1.73	2.94	4.42
1895	.723	.834	.104	.50	.702		.059	1.11	.024	1.63	2.73	4.17
1896	.589	.776	.106	.48	.594		.060	1.03	.024	1.46	2.44	3.76
1897	.605	.858	.115	.49	.594		.068	1.03	.026	1.52	2.51	3.89
1898	.630	.882	.130	.49	.648		.071	1.02	.032	1.58	2.60	4.01
1899	.658	.928	.136	.52	.702		.070	1.13	.034	1.68	2.77	4.29
1900	.842	.964	.132	.50	.702		.072	1.25	.032	1.83	3.03	4.62
1901	.967	.962	.126	.52	.756		.067	1.27	.032	1.93	3.19	4.83
1902	1.135	.988	.131	.62	.918		.072	1.44	.032	2.18	3.64	5.48
1903	1.000	.911	.134	.66	.864		.071	1.34	.036	2.04	3.40	5.15
1904	.842	.851	.123	.66	.972		.072	1.26	.038	1.93	3.24	4.95
1905	.875	.875	.132	.65	.972		.078	1.42	.052	2.04	3.44	5.19
1906	1.055	.882	.139	.67	.918		.086	1.42	.055	2.14	3.58	5.37
1907	1.037	.913	.144	.71	.972		.085	1.57	.048	2.22	3.74	5.62
1908	.937	.935	.145	.69	1.026		.080	1.62	.038	2.18	3.71	5.62
1909	1.206	1.036	.160	.71	1.080	.169	.083	1.78	.052	2.48	4.20	6.28
1910	1.483	1.171	.189	.76	1.129	.174	.104	1.89	.051	2.79	4.67	6.95
1911	1.131	1.101	.176	.71	.945	.155	.084	1.82	.037	2.42	4.09	6.16
1912	1.226	1.309	.191	.71	1.091	.166	.088	1.90	.041	2.66	4.45	6.72
1913	1.374	1.494	.222	.78	1.048	.173	.095	1.93	.039	2.85	4.70	7.16
1914	1.370	1.571	.232	.82	1.107	.166	.099	1.91	.039	2.91	4.79	7.31
1915	1.179	1.509	.227	.76	1.048	.171	.109	1.89	.052	2.75	4.54	6.95
1916	1.525	1.629	.247	.87	1.193	.213	.130	2.07	.062	3.18	5.23	7.94
1917	2.533	2.058	.307	1.10	1.717	.247	.194	2.85	.098	4.56	7.50	11.10
1918	2.933	2.381	.345	1.41	1.944	.295	.223	3.54	.136	5.42	8.93	13.21
1919	2.988	2.403	.375	1.59	2.230	.332	.202	3.94	.117	5.70	9.54	14.18
1920	2.350	2.099	.348	1.70	2.349	.362	.182	3.85	.107	5.21	8.87	13.35
1921	1.390	1.357	.232	1.35	1.528	.336	.105	2.75	.041	3.41	5.92	9.09
1922	1.530	1.381	.225	1.24	1.350	.343	.140	2.52	.064	3.39	5.77	8.79
1923	1.264	1.407	.233	1.24	1.431	.302	.153	2.98	.093	3.48	6.02	9.10
1924	1.337	1.407	.231	1.26	1.442	.277	.156	2.66	.086	3.41	5.83	8.86
1925	1.986	1.574	.253	1.33	1.642	.332	.179	2.85	.093	4.04	6.83	10.24
1926	2.150	1.627	.276	1.43	1.561	.360	.169	2.85	.080	4.14	6.97	10.50
1927	1.756	1.836	.298	1.31	1.355	.357	.166	3.00	.072	3.95	6.66	10.15
1928	1.556	2.294	.348	1.39	1.517	.343	.177	3.02	.085	4.15	6.91	10.73
1929	1.716	2.282	.360	1.48	1.609	.284	.172	3.03	.071	4.27	7.11	11.00
1930	1.611	1.858	.286	1.19	1.280	.234	.112	2.64	.046	3.61	6.04	9.26
1931	1.044	1.333	.205	1.02	.950	.224	.080	2.02	.032	2.62	4.44	6.91
1932	.609	1.024	.146	.76	.767	.148	.063	1.53	.020	1.89	3.22	5.07
1933	.643	.904	.137	.62	.745	.135	.070	1.56	.049	1.87	3.18	4.86
1934	.754	.995	.145	.74	.918	.175	.082	1.86	.052	2.18	3.75	5.72
1935	1.576	1.456	.211	.97	1.264	.233	.102	2.06	.046	3.12	5.20	7.92
1936	1.707	1.403	.212	1.02	1.177	.181	.112	2.25	.063	3.26	5.44	8.13
1937	1.731	1.687	.239	1.04	1.150	.210	.125	2.38	.076	3.47	5.73	8.64
1938	1.410	1.576	.233	.99	1.096	.203	.099	2.07	.045	3.04	5.03	7.72
1939	1.135	1.721	.248	.87	.940	.182	.109	2.02	.053	2.86	4.70	7.28
1940	.982	1.822	.260	.86	.972	.176	.113	2.18	.067	2.90	4.78	7.43
1941	1.656	2.126	.304	1.00	1.269	.231	.135	2.62	.084	3.76	6.18	9.43
1942	2.369	2.579	.363	1.20	1.620	.319	.164	3.09	.095	4.76	7.78	11.80
1943	2.496	2.868	.392	1.55	2.003	.379	.182	3.73	.098	5.42	8.98	13.70
1944	2.387	2.603	.366	1.52	1.755	.393	.174	3.84	.100	5.18	8.66	13.14
1945	2.551	2.916	.384	1.61	2.036	.391	.183	3.82	.099	5.53	9.16	13.99
1946	3.188	3.494	.448	1.74	2.030	.421	.217	4.78	.100	6.56	10.86	16.42
1947	4.391	4.434	.602	1.68	2.446	.423	.280	5.11	.099	7.99	12.97	19.46
1948	4.209	5.350	.720	1.88	2.549	.543	.312	5.84	.116	8.69	14.11	21.52
1949	3.298	4.772	.667	1.54	2.441	.408	.306	4.73	.117	7.38	11.91	18.28
1950	3.280	5.615	.776	1.39	1.960	.382	.348	4.66	.147	7.62	11.99	18.56
1951	3.644	6.917	.941	1.50	2.576	.435	.436	5.48	.229	9.13	14.30	22.16
1952	3.243	5.856	.761	1.43	2.246	.390	.332	5.80	.128	8.15	13.13	20.19
1953	3.899	3.928	.493	1.37	2.576	.391	.258	5.17	.130	7.46	12.28	18.21
1954	3.936	3.856	.487	1.12	1.976	.334	.254	4.75	.126	7.03	11.42	16.84
1955	2.733	3.760	.493	1.23	2.101	.350	.244	4.79	.101	6.33	10.47	15.80
1956	2.624	3.591	.472	.98	2.090	.316	.244	4.95	.104	6.18	10.30	15.37
1957	3.243	4.145	.552	.93	1.933	.271	.263	5.04	.126	6.81	11.11	16.50

AP-26, SOURCES

Price Indicator, 1954 Output Weights:

COL. A, Hogs. Table AP-28, Col. D, times 18.22 bil. lb.

COL. B, Beef cattle. Table AP-29, Col. D, times 24.1 bil. lb.[1]

COL. C, Calves. Table AP-30, Col. D, times 2.95 bil. lb. (live weight, derived from Table AO-31: 1,647 mil. divided by .557 dressing-out ratio).

COL. D, Chickens. Table AP-31, Col. I, times 6.47 bil. lb.[2]

COL. E, Eggs. Table AP-32, Col. D, times 5.40 bil. dozen.

COL. F, Turkeys. Table AP-33, Col. A, times 1.16 bil. lb.

COL. G, Lambs. Table AP-34, Col. F, times 1.60 bil. lb. (value of production of sheep and lambs divided by 1954 price).

COL. H, Milk. Table AP-36, Col. D, times 122 bil. lb. (divided by 100), extrapolated for 1870-1909 from Table AP-35, Col. F (linked by average 1910-14 ratio).

COL. I, Wool. Table AP-39, Col. E, times 236 mil. lb.

COLS. J and K, Price indicators, 1902 and 1929 output weights. Computed exactly as Col. L, except that 1902 and 1929 outputs were used as weights in the computation. (For weights, see notes, below.)

COL. L, Price indicator, 1954 output weights. Sum of Cols. A through I, linked for missing series.

AP-26, NOTES

[1] An artificial quantity, derived by dividing the 1954 price into the 1954 total value of production of cattle and calves ($4.338 billion; *Ag. Stat. 1957*, p. 379) reduced by the value assigned to calves for 1954 in Col. C ($0.487 billion): 4.338 minus .487, divided by .1600 = 24.1 billion lb.

[2] The value of output of chickens is calculated from *Ag. Stat. 1957* as follows: To farm value of chickens produced (Table 592) is added 13.5% for backyard production, on the basis of Table 601, which gives farm and nonfarm production as 1,504 million pounds, which is 1.135 times 68% of live weight of chickens produced (Table 592); to this is added value of commercial broilers produced, from Table 596.

The quantity weights are taken generally from our tables on output, or from *Ag. Stat. 1957*.

COLS. J and K. The weights used in the computation of the 1902 and 1929-weighted output indicators are as follows:

Commodity	*1902 output weights*	*1929 output weights*
A Hogs	10.6 bil. lb.	15.58 bil. lb.
B Cattle	10.3 bil. lb.	11.20 bil. lb.
C Calves	.83 bil. lb.	1.37 bil. lb.
D Chickens	1.74 bil. lb.	2.78 bil. lb.
E Eggs	1.78 bil. doz.	3.48 bil. doz.
F Turkeys	(omitted)	.239 bil. lb.
G Sheep and lambs	1.24 bil. lb.	1.79 bil. lb.
H Milk and products	41.2 bil. lb.	94.7 bil. lb.
I Wool	.316 bil. lb.	.328 bil. lb.

AP-27. MEAT ANIMALS: Price

	Strauss & Bean (1910-14 = 100)	AMS (1910-14 = 100)	BLS (1947-49 = 100)	Col. B / Col. C	Preferred series (1910-14 = 100)
	A	B	C	D	E
1870	95.1				95.1
1871	70.0				70.0
1872	62.8				62.8
1873	63.8				63.8
1874	72.3				72.3
1875	83.2				83.2
1876	78.4				78.4
1877	67.9				67.9
1878	52.2				52.2
1879	50.8				50.8
1880	76.3				76.3
1881	71.8				71.8
1882	82.6				82.6
1883	80.0				80.0
1884	77.0				77.0
1885	62.3				62.3
1886	58.6				58.6
1887	63.0				63.0
1888	66.6				66.6
1889	56.4				56.4
1890	53.6				53.6
1891	57.8				57.8
1892	58.9				58.9
1893	71.2				71.2
1894	59.5				59.5
1895	58.2				58.2
1896	51.0				51.0
1897	54.4				54.4
1898	56.7				56.7
1899	59.6				59.6
1900	68.2				68.2
1901	73.0				73.0
1902	80.6				80.6
1903	72.9				72.9
1904	64.7				64.7
1905	67.2				67.2
1906	75.0				75.0
1907	75.3				75.3
1908	71.8				71.8
1909	85.9				85.9
1910	102.9	101			101
1911	86.1	84			84
1912	94.3	96			96
1913	107.0	108			108
1914	110.1	111			111
1915	101.5	102			102
1916	117.9	121			121
1917	171.5	176			176
1918	202.6	202			202
1919	205.5	207			207
1920	172.3	171			171
1921	107.7	106			106
1922	112.4	113			113
1923	104.7	105			105
1924	107.2	109			109
1925	138.7	139			139
1926	147.3	146	44.4	3.29	146
1927	137.8	138	44.2	3.12	138
1928	142.6	150	47.1	3.18	150
1929	149.7	155	47.1	3.29	155
1930	130.4	133	39.7	3.35	133
1931	89.3	91	28.1	3.24	91
1932	59.9	63	21.0	3.00	63
1933	61.0	59	19.4	3.04	59
1934	65.6	68	23.2	2.93	68
1935	115.4	115	39.7	2.90	115
1936	120.2	118	39.5	2.99	118
1937	131.0	130	45.1	2.88	130
1938		113	36.5	3.10	113
1939		110	32.2	3.42	110
1940		108	31.4	3.44	108
1941		143	42.4	3.37	143
1942		186	55.8	3.33	186
1943		203	59.8	3.39	203
1944		190	58.5	3.25	190
1945		207	60.8	3.40	207
1946		248	71.9	3.45	248
1947		329	97.6	3.37	329
1948		361	110.1	3.28	361
1949		311	92.3	3.37	311
1950		340	100.8	3.37	340
1951		409	119.9	3.41	409
1952		353	104.2	3.39	353
1953		288	88.5	3.25	288
1954		283	87.3	3.24	283
1955		246	74.9	3.28	246
1956		235	72.1	3.26	235
1957		275	83.2	3.31	275

AP-27, SOURCES

COL. A, Strauss & Bean, Table 88, farm price index for meat animals.

COL. B, *Ag. Prices,* May 1956, Supplement No. 1, p. 48, farm price for meat animals; *Ag. Prices,* Feb. 1959, p. 42.[1]

COL. C, BLS mimeographed sheet for series 01-3-1.

COL. D, Ratio, Col. B/Col. C.

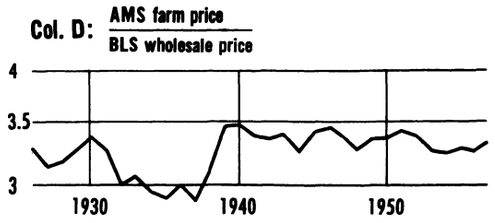
COL. E, Preferred series

1870-1909. Col. A, transcribed.

1910-57. Col. B, transcribed.

AP-27, NOTES

[1] Beginning in 1952, the series are revisions by the USDA, spliced to the earlier data. The revisions are generally based on the introduction of a new weight base period: 1953-57.



COL. D. The chart shows the ratio of AMS farm price for meat animals to the BLS wholesale market price. Both series include beef cattle (cows, steers in BLS), calves, hogs, and lambs. AMS also includes sheep, which were dropped from the BLS series in 1947. Different weighting periods were used in constructing the indexes as well as different weights. The following table shows the relative importance of the components at the beginning and end of the period.

	AMS		*BLS*	
	1924-29	*1937-41*	*1926*	*1954*
Beef	42%	47%	35%	50%
Calves	6	7	6	7
Hogs	44	38	54	40
Sheep	1	1	1	..
Lambs	7	7	4	3
	100	100	100	100

The major difference between the two sources lies in the relative weight given to hogs. Over the period in question, AMS statistics show that the price of hogs has risen less than that of all meat animals. The greater weight given to hogs by BLS, therefore, would tend to diminish the over-all rise in the BLS price index.

Another reason for the difference in trend lies in the levels at which prices are taken. The AMS series refers to prices received by the farmers. The BLS series refers to prices at the market and consequently includes transportation costs to the market. It was also subject to Office of Price Administration controls.

COL. E. A consistent series can be obtained without adjustment because there are only negligible differences between the Strauss & Bean and AMS series during the period of overlap, 1910-1937.

AP-28. HOGS: Price

	Strauss & Bean, farm price (¢ per lb.)	AMS, farm price (¢ per lb.)	Col. B / Col. A	Preferred series (¢ per lb.)
	A	B	C	D
1870	6.61			6.61
1871	4.34			4.34
1872	3.65			3.65
1873	3.76			3.76
1874	4.68			4.68
1875	5.95			5.95
1876	5.67			5.67
1877	4.46			4.46
1878	3.08			3.08
1879	3.06			3.06
1880	5.90			5.90
1881	5.04			5.04
1882	6.00			6.00
1883	5.54			5.54
1884	4.85			4.85
1885	3.75			3.75
1886	3.64			3.64
1887	4.43			4.43
1888	4.96			4.96
1889	3.97			3.97
1890	3.50			3.50
1891	3.85			3.85
1892	4.24			4.24
1893	5.51			5.51
1894	4.23			4.23
1895	3.97			3.97
1896	3.23			3.23
1897	3.32			3.32
1898	3.46			3.46
1899	3.61			3.61
1900	4.62			4.62
1901	5.31			5.31
1902	6.23			6.23
1903	5.49			5.49
1904	4.62			4.62
1905	4.80			4.80
1906	5.79			5.79
1907	5.69			5.69
1908	5.14			5.14
1909	6.62	6.62	1.00	6.62
1910	8.11	8.14	1.00	8.14
1911	6.23	6.21	.997	6.21
1912	6.62	6.73	1.02	6.73
1913	7.45	7.54	1.01	7.54
1914	7.48	7.52	1.01	7.52
1915	6.53	6.47	.991	6.47
1916	8.09	8.37	1.03	8.37
1917	13.19	13.90	1.05	13.90
1918	15.82	16.10	1.02	16.10
1919	16.01	16.40	1.02	16.40
1920	12.88	12.90	1.00	12.90
1921	7.82	7.63	.976	7.63
1922	8.34	8.40	1.01	8.40
1923	7.10	6.94	.977	6.94
1924	7.41	7.34	.990	7.34
1925	10.79	10.90	1.01	10.90
1926	11.74	11.80	1.01	11.80
1927	9.63	9.64	1.00	9.64
1928	8.50	8.54	1.00	8.54
1929	9.33	9.42	1.01	9.42
1930	8.78	8.84	1.01	8.84
1931	5.83	5.73	.983	5.73
1932	3.44	3.34	.971	3.34
1933	3.94	3.53	.896	3.53
1934	4.17	4.14	.993	4.14
1935	8.36	8.65	1.03	8.65
1936	9.30	9.37	1.01	9.37
1937	9.48	9.50	1.00	9.50
1938		7.74		7.74
1939		6.23		6.23
1940		5.39		5.39
1941		9.09		9.09
1942		13.00		13.00
1943		13.70		13.70
1944		13.10		13.10
1945		14.00		14.00
1946		17.50		17.50
1947		24.10		24.10
1948		23.10		23.10
1949		18.10		18.10
1950		18.00		18.00
1951		20.00		20.00
1952		17.80		17.80
1953		21.40		21.40
1954		21.60		21.60
1955		15.00		15.00
1956		14.40		14.40
1957		17.80		17.80

AP-28, SOURCES

Col. A, Strauss & Bean, Table 54, farm price for hogs.
Col. B, AMS Stat. Bull. 180, Table 28, farm price for hogs (live weight); *Ag. Stat. 1959*, p. 332.
Col. C, Ratio, Col. B/Col. A.
Col. D, Preferred series
1870-1908. Col. A, transcribed.
1909-57. Col. B, transcribed.

AP-28, NOTES

The two price series are sufficiently close to permit carrying forward from Strauss & Bean to AMS, at 1909, without adjustment.

AP-29. BEEF CATTLE: Price

	Strauss & Bean, farm price (c per lb.)	AMS, farm price ($ per cwt.)	Col. B / Col. A	Preferred series ($ per cwt.)
	A	B	C	D
1870	5.40			5.62
1871	4.55			4.73
1872	4.33			4.50
1873	4.24			4.41
1874	4.36			4.53
1875	4.32			4.49
1876	4.00			4.16
1877	4.01			4.17
1878	3.49			3.63
1879	3.37			3.50
1880	3.66			3.81
1881	3.92			4.08
1882	4.33			4.50
1883	4.45			4.63
1884	4.86			5.05
1885	4.02			4.18
1886	3.62			3.76
1887	3.40			3.54
1888	3.34			3.47
1889	2.97			3.09
1890	3.08			3.20
1891	3.29			3.42
1892	3.04			3.16
1893	3.40			3.54
1894	3.21			3.34
1895	3.33			3.46
1896	3.10			3.22
1897	3.42			3.56
1898	3.52			3.66
1899	3.70			3.85
1900	3.85			4.00
1901	3.84			3.99
1902	3.94			4.10
1903	3.63			3.78
1904	3.39			3.53
1905	3.49			3.63
1906	3.52			3.66
1907	3.64			3.79
1908	3.73			3.88
1909	4.13			4.30
1910	4.78	4.86	1.02	4.86
1911	4.46	4.57	1.02	4.57
1912	5.12	5.43	1.06	5.43
1913	5.90	6.20	1.05	6.20
1914	6.23	6.52	1.05	6.52
1915	6.00	6.26	1.04	6.26
1916	6.47	6.76	1.04	6.76
1917	8.17	8.54	1.05	8.54
1918	9.44	9.88	1.05	9.88
1919	9.59	9.97	1.04	9.97
1920	8.42	8.71	1.03	8.71
1921	5.50	5.63	1.02	5.63
1922	5.43	5.73	1.06	5.73
1923	5.58	5.84	1.05	5.84
1924	5.55	5.84	1.05	5.84
1925	6.23	6.53	1.05	6.53
1926	6.43	6.75	1.05	6.75
1927	7.23	7.62	1.05	7.62
1928	9.12	9.52	1.04	9.52
1929	9.15	9.47	1.03	9.47
1930	7.46	7.71	1.03	7.71
1931	5.31	5.53	1.04	5.53
1932	4.07	4.25	1.04	4.25
1933	3.63	3.75	1.03	3.75
1934	3.88	4.13	1.06	4.13
1935	6.21	6.04	.97	6.04
1936	5.85	5.82	.99	5.82
1937	6.96	7.00	1.01	7.00
1938		6.54		6.54
1939		7.14		7.14
1940		7.56		7.56
1941		8.82		8.82
1942		10.70		10.70
1943		11.90		11.90
1944		10.80		10.80
1945		12.10		12.10
1946		14.50		14.50
1947		18.40		18.40
1948		22.20		22.20
1949		19.80		19.80
1950		23.30		23.30
1951		28.70		28.70
1952		24.30		24.30
1953		16.30		16.30
1954		16.00		16.00
1955		15.60		15.60
1956		14.90		14.90
1957		17.20		17.20

AP-29, SOURCES

COL. A, Strauss & Bean, Table 48, cattle, farm price, calendar years.

COL. B, AMS Stat. Bull. 180, Table 29, beef cattle, price received by farmers, weighted average (live weight); *Ag. Stat. 1959*, p. 320.

COL. C, Ratio, Col. B/Col. A.

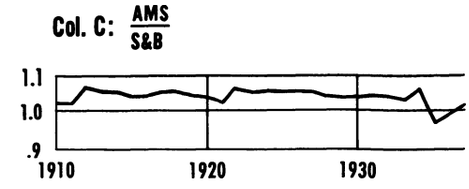
COL. D, Preferred series

1870-1909. Col. A times the average of the ratios in Col. C (1.04).

1910-57. Col. B, transcribed.

AP-29, NOTES

The AMS farm price for beef cattle is an almost constant 4% higher than the Strauss & Bean price for the years of overlap, as shown in the chart.



AP-30. CALVES: Price

	S & B, farm price (¢ per lb.)	AMS, farm price ($ per cwt.)	Col. B / Col. A	Preferred series, farm price ($ per cwt.)
	A	B	C	D
1870	5.99			5.99
1871	5.77			5.77
1872	4.98			4.98
1873	6.68			6.68
1874	6.12			6.12
1875	7.27			7.27
1876	6.57			6.57
1877	6.11			6.11
1878	4.65			4.65
1879	3.48			3.48
1880	4.00			4.00
1881	4.86			4.86
1882	5.05			5.05
1883	5.44			5.44
1884	5.32			5.32
1885	4.95			4.95
1886	4.69			4.69
1887	4.41			4.41
1888	4.32			4.32
1889	4.14			4.14
1890	4.03			4.03
1891	3.89			3.89
1892	3.67			3.67
1893	3.77			3.77
1894	3.46			3.46
1895	3.52			3.52
1896	3.60			3.60
1897	3.89			3.89
1898	4.39			4.39
1899	4.62			4.62
1900	4.49			4.49
1901	4.28			4.28
1902	4.44			4.44
1903	4.55			4.55
1904	4.17			4.17
1905	4.46			4.46
1906	4.72			4.72
1907	4.87			4.87
1908	4.90			4.90
1909	5.44			5.44
1910	6.42	6.40	.997	6.40
1911	6.02	5.97	.992	5.97
1912	6.44	6.49	1.01	6.49
1913	7.47	7.51	1.01	7.51
1914	7.81	7.85	1.01	7.85
1915	7.61	7.70	1.01	7.70
1916	8.35	8.37	1.00	8.37
1917	10.54	10.40	.987	10.40
1918	11.93	11.70	.981	11.70
1919	12.76	12.70	.995	12.70
1920	11.86	11.80	.995	11.80
1921	7.85	7.85	1.00	7.85
1922	7.69	7.64	.993	7.64
1923	7.99	7.90	.989	7.90
1924	8.11	7.83	.965	7.83
1925	8.85	8.59	.971	8.59
1926	9.61	9.34	.972	9.34
1927	10.15	10.10	.995	10.10
1928	11.72	11.80	1.01	11.80
1929	12.17	12.20	1.00	12.20
1930	9.91	9.68	.977	9.68
1931	7.04	6.95	.987	6.95
1932	5.00	4.95	.990	4.95
1933	4.57	4.64	1.02	4.64
1934	4.81	4.92	1.02	4.92
1935	7.10	7.16	1.01	7.16
1936	7.23	7.20	.996	7.20
1937	8.32	8.10	.974	8.10
1938		7.90		7.90
1939		8.40		8.40
1940		8.83		8.83
1941		10.30		10.30
1942		12.30		12.30
1943		13.30		13.30
1944		12.40		12.40
1945		13.00		13.00
1946		15.20		15.20
1947		20.40		20.40
1948		24.40		24.40
1949		22.60		22.60
1950		26.30		26.30
1951		31.90		31.90
1952		25.80		25.80
1953		16.70		16.70
1954		16.50		16.50
1955		16.70		16.70
1956		16.00		16.00
1957		18.70		18.70

AP-30, SOURCES

Col. A, Strauss & Bean, Table 51, farm price for calves.
Col. B, AMS Stat. Bull. 180, Table 30, farm price for calves (live weight); *Ag. Stat. 1959*, p. 320.
Col. C, Ratio, Col. B/Col. A.
Col. D, Preferred series
1870-1909. Col. A, transcribed.
1910-57. Col. B, transcribed.

AP-30, NOTES

The two price series for calves are sufficiently close to permit carrying forward from Strauss & Bean to AMS without adjustment at 1910.

AP-31. CHICKENS: Price

	Strauss & Bean, farm price (¢ per lb.)	AMS, farm price, all chickens (¢ per lb.)	Farm price chickens (¢ per lb.)	Commercial broiler price (¢ per lb.)	Adjusted price of broilers	Farm quantity sold (bil. lb.)	Commercial broiler production (bil. lb.)	Average value of all sales, adjusted (¢ per lb.)	Preferred series (¢ per lb.)
	A	B	C	D	E	F	G	H	I
1870	10.1								10.4
1871	9.7								10.0
1872	9.5								9.8
1873	9.6								9.9
1874	8.8								9.0
1875	8.7								9.0
1876	8.8								9.0
1877	7.4								7.6
1878	5.7								5.9
1879	6.2								6.4
1880	6.5								6.7
1881	7.2								7.4
1882	7.7								7.9
1883	8.4								8.6
1884	8.1								8.3
1885	6.7								6.9
1886	6.0								6.2
1887	6.3								6.5
1888	6.8								7.0
1889	7.0								7.2
1890	7.5								7.7
1891	7.7								7.9
1892	7.6								7.8
1893	7.7								7.9
1894	7.6								7.8
1895	7.6								7.8
1896	7.2								7.4
1897	7.4								7.6
1898	7.3								7.5
1899	7.9								8.1
1900	7.5								7.7
1901	7.8								8.0
1902	9.2								9.5
1903	9.9								10.2
1904	9.9								10.2
1905	9.8								10.1
1906	10.0								10.3
1907	10.7								11.0
1908	10.3								10.6
1909	10.8	10.9							10.9
1910	11.3	11.8							11.8
1911	10.4	10.9							10.9
1912	10.9	11.0							11.0
1913	11.7	12.1							12.1
1914	11.8	12.6							12.6
1915	11.6	11.8							11.8
1916	13.4	13.5							13.5
1917	16.9	16.9							16.9
1918	21.6	21.7							21.7
1919	23.4	24.6							24.6
1920	24.3	26.3							26.3
1921	20.1	20.9							20.9
1922	18.4	19.2							19.2
1923	18.3	19.1							19.1
1924	18.8	19.4							19.4
1925	19.8	20.5							20.5
1926	21.1	22.1							22.1
1927	19.9	20.2							20.2
1928	21.4	21.4							21.4
1929	21.7	22.8							22.8
1930	17.8	18.4							18.4
1931	15.0	15.8							15.8
1932	11.1	11.7							11.7
1933	9.1	9.5							9.5
1934	11.2	11.6	11.3	19.3	14.7	1.54	0.10	11.5	11.5
1935	15.3	15.3	14.9	20.1	15.3	1.41	0.12	14.9	14.9
1936	15.0	15.5	15.8	20.7	15.8	1.54	0.15	15.8	15.8
1937	16.0	16.7	15.9	21.4	16.3	1.42	0.20	16.0	16.0
1938		15.4	15.4	19.0	14.5	1.28	0.24	15.3	15.3
1939		13.8	13.5	17.0	12.9	1.48	0.31	13.4	13.4
1940		13.9	13.2	17.3	13.2	1.51	0.41	13.2	13.2
1941		16.3	15.8	18.4	14.0	1.67	0.56	15.4	15.4
1942		19.8	19.0	22.9	17.4	2.05	0.67	18.6	18.6
1943		25.3	24.5	28.6	21.8	2.84	0.83	23.9	23.9
1944		24.9	24.0	28.7	21.9	2.64	0.79	23.5	23.5
1945		27.0	25.9	29.5	22.5	2.62	1.11	24.9	24.9
1946		29.0	27.6	32.7	24.9	2.32	0.88	26.9	26.9
1947		28.2	26.5	32.3	24.6	2.14	0.94	25.9	25.9
1948		32.3	30.1	36.0	27.4	1.80	1.13	29.1	29.1
1949		26.6	25.4	28.2	21.5	1.95	1.57	23.7	23.7
1950		24.9	22.2	27.4	20.9	1.86	1.94	21.5	21.5
1951		27.0	25.0	28.5	21.7	1.79	2.41	23.1	23.1
1952		26.2	22.1	28.8	21.9	1.64	2.62	22.0	22.0
1953		25.3	22.1	27.1	20.6	1.58	2.90	21.1	21.1
1954		21.1	16.8	23.1	17.6	1.51	2.24	17.3	17.3
1955			18.6	25.2	19.2	1.23	3.35	19.0	19.0
1956			15.9	19.6	14.9	1.19	4.27	15.1	15.1
1957			13.6	18.9	14.4	1.01	4.68	14.3	14.3

AP-31, SOURCES

COL. A, Strauss & Bean, Table 45, farm price.
COL. B, AMS Stat. Bull. 180, p. 43, average price, all chickens.
COL. C, *Ag. Stat. 1952*, p. 511, and *1959*, p. 413, average price, farm chickens only (omitting commercial broilers).
COL. D, *Ag. Stat. 1952*, p. 519, and *1959*, p. 418, average price, commercial broilers.
COL. E, Col. D times 1953-57 average ratio (.762) of farm/broiler prices (broiler price, adjusted).
COL. F, *Ag. Stat. 1952*, p. 511, and *1959*, p. 413, chickens sold, pounds.
COL. G, *Ag. Stat. 1952*, p. 519, and *1959*, p. 418, commercial broiler production, pounds.
COL. H, Average value of all sales. Col. C prices weighted by quantities in Col. F; Col. E prices weighted by quantities in Col. G.

COL. I, Preferred series
1870-1908. Col. A times average 1909-13 ratios of Col. B/Col. A. (1.029).
1909-33. Col. B, transcribed.
1934-57. Col. H, transcribed.

AP-31, NOTES

COL. I. The significant qualitative difference between commercial broilers and farm chickens is reflected in the prices, as shown by Cols. C and D. In order to allow for this difference in quality and to obtain a consistent long-term series, we have adjusted the commercial broiler price downward to the level of the farm chicken price.

AP-32. EGGS: Price

	Strauss & Bean, farm price (¢ per doz.)	Col. C / Col. A	Preferred series, farm price (¢ per doz.)
	A	B	C
1870	20		21
1871	17		17
1872	18		18
1873	18		18
1874	16		16
1875	18		18
1876	15		15
1877	14		14
1878	12		12
1879	13		13
1880	12		12
1881	17		17
1882	17		17
1883	18		18
1884	17		17
1885	14		14
1886	13		13
1887	14		14
1888	15		15
1889	13		13
1890	14		14
1891	15		15
1892	15		15
1893	16		16
1894	13		13
1895	13		13
1896	11		11
1897	11		11
1898	12		12
1899	13		13
1900	13		13
1901	14		14
1902	17		17
1903	16		16
1904	18		18
1905	18		18
1906	17		17
1907	18		18
1908	19		19
1909	19.6	1.02	20.0
1910	20.5	1.02	20.9
1911	16.9	1.04	17.5
1912	19.8	1.02	20.2
1913	18.8	1.03	19.4
1914	20.1	1.02	20.5
1915	18.9	1.03	19.4
1916	21.4	1.03	22.1
1917	31.3	1.02	31.8
1918	35.2	1.02	36.0
1919	39.9	1.04	41.3
1920	42.3	1.03	43.5
1921	26.9	1.05	28.3
1922	23.9	1.05	25.0
1923	25.6	1.04	26.5
1924	25.2	1.06	26.7
1925	30.4	1.00	30.4
1926	28.8	1.00	28.9
1927	25.0	1.00	25.1
1928	28.0	1.00	28.1
1929	29.9	.997	29.8
1930	23.7	1.00	23.7
1931	17.5	1.01	17.6
1932	14.2	1.00	14.2
1933	13.8	1.00	13.8
1934	17.0	1.00	17.0
1935	23.4	1.00	23.4
1936	21.7	1.00	21.8
1937	20.9	1.02	21.3
1938			20.3
1939			17.4
1940			18.0
1941			23.5
1942			30.0
1943			37.1
1944			32.5
1945			37.7
1946			37.6
1947			45.3
1948			47.2
1949			45.2
1950			36.3
1951			47.7
1952			41.6
1953			47.7
1954			36.6
1955			38.9
1956			38.7
1957			35.8

AP-32, SOURCES

COL. A, Strauss & Bean, Table 46, farm price.
COL. B, Ratio, Col. C./Col. A.
COL. C, Preferred series
1870-1908. Col. A times the average of the ratios in Col. B for 1909-13 (ratio, 1.03).
1909-50. AMS Stat. Bull. 180, Table 45, farm price.
1951-57. *Ag. Stat. 1959*, p. 431.

AP-33. TURKEYS: Price

AP-33, SOURCES

COL. A
1909-48. AMS Stat. Bull. 180, Table 44.
1949-57. *Ag. Stat. 1959*, p. 428, price per pound, live weight.

	Price per lb. live weight (cents)
	A
1909	14.6
1910	15.0
1911	13.4
1912	14.3
1913	14.9
1914	14.3
1915	14.7
1916	18.4
1917	21.3
1918	25.4
1919	28.6
1920	31.2
1921	29.0
1922	29.6
1923	26.0
1924	23.9
1925	28.6
1926	31.0
1927	30.8
1928	29.6
1929	24.5
1930	20.2
1931	19.3
1932	12.8
1933	11.6
1934	15.1
1935	20.1
1936	15.6
1937	18.1
1938	17.5
1939	15.7
1940	15.2
1941	19.9
1942	27.5
1943	32.7
1944	33.9
1945	33.7
1946	36.3
1947	36.5
1948	46.8
1949	35.2
1950	32.9
1951	37.5
1952	33.6
1953	33.7
1954	28.8
1955	30.2
1956	27.2
1957	23.4

AP-34. SHEEP AND LAMBS: Price

	Farm price per lb. of sheep, live weight (cents)	Average price per 100 lb. received by farmers (dollars)		Average, sheep & lamb prices	Col. D / Col. A	Preferred series (¢ per lb.)
		Sheep	Lambs			
	A	B	C	D	E	F
1870	4.30					4.80
1871	4.26					4.76
1872	5.24					5.85
1873	4.37					4.88
1874	4.13					4.61
1875	4.25					4.75
1876	4.04					4.51
1877	3.62					4.04
1878	3.33					3.72
1879	3.26					3.64
1880	3.30					3.69
1881	3.86					4.31
1882	4.19					4.68
1883	4.22					4.71
1884	3.88					4.33
1885	3.74					4.18
1886	3.45					3.85
1887	3.49					3.90
1888	3.68					4.11
1889	3.83					4.28
1890	3.77					4.21
1891	3.78					4.22
1892	4.09					4.57
1893	3.97					4.43
1894	3.32					3.71
1895	3.28					3.66
1896	3.38					3.78
1897	3.80					4.24
1898	3.96					4.42
1899	3.89					4.35
1900	4.00					4.47
1901	3.77					4.21
1902	4.00					4.47
1903	3.95					4.41
1904	4.02					4.49
1905	4.37					4.88
1906	4.79					5.35
1907	4.76					5.32
1908	4.50					5.03
1909	4.62					5.16
1910	5.80					6.48
1911	4.72					5.27
1912	4.92					5.50
1913	5.30					5.92
1914	5.55					6.20
1915	6.11					6.82
1916	7.25					8.10
1917	10.86					12.13
1918	12.46					13.92
1919	11.28					12.60
1920	10.18					11.37
1921	5.90					6.59
1922	7.85					8.77
1923	8.56					9.56
1924	8.75	6.57	10.80	9.74	1.113	9.74
1925	9.97	7.56	12.40	11.19	1.122	11.19
1926	9.48	7.20	11.70	10.58	1.116	10.58
1927	9.32	7.01	11.50	10.38	1.114	10.38
1928	9.88	7.65	12.20	11.06	1.119	11.06
1929	9.73	7.19	11.90	10.72	1.102	10.72
1930	6.72	4.74	7.76	7.00	1.042	7.00
1931	4.58	3.11	5.64	5.01	1.094	5.01
1932	3.40	2.24	4.47	3.91	1.150	3.91
1933	3.58	2.38	5.04	4.38	1.223	4.38
1934	4.36	2.85	5.90	5.14	1.179	5.14
1935	5.29	3.75	7.28	6.40	1.210	6.40
1936	5.95	3.77	8.05	6.98	1.173	6.98
1937	6.46	4.52	8.88	7.79	1.206	7.79
1938		3.58	7.05	6.18		6.18
1939		3.90	7.78	6.81		6.81
1940		3.95	8.10	7.06		7.06
1941		5.06	9.58	8.45		8.45
1942		5.80	11.70	10.22		10.22
1943		6.57	13.00	11.39		11.39
1944		6.01	12.50	10.88		10.88
1945		6.38	13.10	11.42		11.42
1946		7.48	15.60	13.57		13.57
1947		8.39	20.50	17.47		17.47
1948		9.69	22.80	19.52		19.52
1949		9.27	22.40	19.12		19.12
1950		11.60	25.10	21.72		21.72
1951		16.00	31.00	27.25		27.25
1952		10.00	24.30	20.72		20.72
1953		6.67	19.30	16.14		16.14
1954		6.14	19.10	15.86		15.86
1955		5.81	18.40	15.25		15.25
1956		5.61	18.50	15.28		15.28
1957		6.07	19.90	16.45		16.45

AP-34, SOURCES

Col. A, Strauss & Bean, p. 122, farm price per pound live weight of sheep for 1870-89; of sheep and lambs, 1890-1937.

Col. B, *Ag. Stat. 1952*, p. 426, and *1959*, p. 343, average price per 100 pounds received by farmers, sheep.

Col. C, *Ibid.*, average price per 100 pounds received by farmers, lambs.

Col. D, Average of sheep and lamb prices, weighted sheep 1, lambs 3.

Col. E, Ratio, Col. D./Col. A.

Col. F, Preferred series, farm price, sheep and lambs (live weight)

1870-1923. Col. A times 1924-1928 average ratio in Col. E (1.117).

1924-57. Col. D, transcribed.

AP-34, NOTES

Col. A. Strauss and Bean suggest (p. 122) a possible downward bias in their series for 1890-1937 because of a trend toward greater consumption of lamb as against sheep. However, this downward bias affects farm income estimates, not price as such, which would have a downward bias through inadequate weighting of lamb only if there were a greater tendency of lamb than of sheep prices to rise.

Col. D. This appears to be the approximate average ratio of sheep and lamb meats production, from the figures of the U. S. Department of Agriculture (*Ag. Stat. 1952*, p. 426), calculating from the columns on "Quantity produced," "Value of production," and the average prices for sheep and lambs quoted in Col. B and Col. C. However, the implications of these average price data do not check closely, in their year-to-year movement, with the figures on marketings of sheep and lamb, in the same table.

AP-35. DAIRY PRODUCTS: Price

	Strauss & Bean, farm price (¢ per lb. of milk)	AMS (1910-14 = 100)	Col. B / Col. A	Ag. Stat. ($ per 100 lb. of milk)	Col. D / Col. A	Preferred series ($ per 100 lb. of milk)
	A	B	C	D	E	F
1870	1.36					1.54
1871	1.18					1.34
1872	1.17					1.33
1873	1.24					1.41
1874	1.33					1.51
1875	1.13					1.28
1876	1.02					1.16
1877	.89					1.01
1878	.78					.89
1879	.74					.84
1880	.93					1.06
1881	1.03					1.17
1882	1.18					1.34
1883	.97					1.10
1884	.94					1.07
1885	.83					.94
1886	.83					.94
1887	.89					1.01
1888	.88					1.00
1889	.83					.94
1890	.78					.89
1891	.88					1.00
1892	.93					1.06
1893	1.01					1.15
1894	.88					1.00
1895	.73					.83
1896	.68					.77
1897	.68					.77
1898	.69					.78
1899	.74					.84
1900	.82					.93
1901	.84					.95
1902	.94					1.07
1903	.88					1.00
1904	.83					.94
1905	.93					1.06
1906	.93					1.06
1907	1.03					1.17
1908	1.07					1.21
1909	1.17					1.33
1910	1.27	100	78.7			1.44
1911	1.12	94	83.9			1.27
1912	1.27	101	79.5			1.44
1913	1.31	104	79.4			1.49
1914	1.27	101	79.5			1.44
1915	1.27	101	79.5			1.44
1916	1.38	111	80.4			1.57
1917	1.78	145	81.5			2.02
1918	2.14	177	82.7			2.43
1919	2.48	200	80.6			2.82
1920	2.63	202	76.8			2.99
1921	1.82	149	81.9			2.07
1922	1.74	139	79.9			1.98
1923	1.97	159	80.7			2.24
1924	1.90	148	77.9	2.16	1.137	2.16
1925	1.98	156	78.8	2.26	1.141	2.26
1926	2.02	156	77.2	2.25	1.114	2.25
1927	2.07	162	78.3	2.35	1.135	2.35
1928	2.11	165	78.2	2.41	1.142	2.41
1929	2.09	166	79.4	2.39	1.144	2.39
1930	1.76	142	80.7	2.07	1.176	2.07
1931	1.33	111	83.4	1.60	1.203	1.60
1932	1.00	86	86.0	1.24	1.240	1.24
1933	.95	87	91.6	1.26	1.326	1.26
1934	1.08	101	93.5	1.49	1.380	1.49
1935	1.24	114	91.9	1.69	1.363	1.69
1936	1.30	125	96.2	1.86	1.431	1.86
1937	1.42	131	92.2	1.92	1.352	1.92
1938		115		1.66		1.66
1939		110		1.59		1.59
1940		120		1.74		1.74
1941		140		2.04		2.04
1942		163		2.40		2.40
1943		198		2.89		2.89
1944		222		3.02		3.02
1945		229		3.04		3.04
1946		268		3.81		3.81
1947		273		4.12		4.12
1948		301		4.66		4.66
1949		252		3.81		3.81
1950		249		3.75		3.75
1951		286		4.40		4.40
1952		303		4.68		4.68
1953		267		4.19		4.19
1954		246		3.86		3.86
1955		247		3.89		3.89
1956		255		4.02		4.02
1957		259		4.12		4.12

AP-35, SOURCES

COL. A, Strauss & Bean, Table 44, farm price, all milk.

COL. B, *Ag. Prices*, May 1956, Supplement 1, p. 49, and February 15, 1959, p. 42, farm price.

COL. C, Ratio, Col. B/Col. A.

COL. D, *Ag. Stat. 1952*, Table 547, and *1959*, Table 565, average returns per 100 lbs. of milk, combined sales of milk, cream, and farm butter.

COL. E, Ratio, Col. D./Col. A.

COL. F, Preferred series

1870-1923. Col. A times average of 1924-25 ratios in Col. E (1.1355).

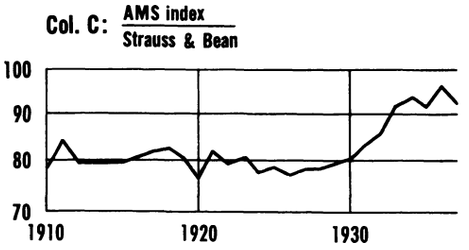
1924-57. Col. D, transcribed.

AP-35, NOTES

COL. A. The Strauss & Bean dairy products price series is based almost entirely on their estimates for the price of butter. The notes to Table AP-37 describe the wide divergence in trends of the different available butter series and raise questions as to the accuracy of the Strauss & Bean estimates.

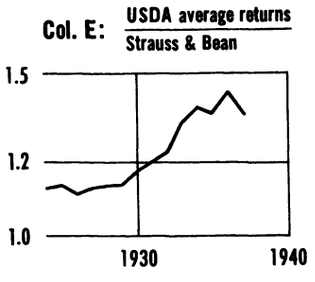
COL. B. The AMS series is an index with three different weight base periods: for 1910 through 1934, 1924-29 weights were used; for 1935-52, 1937-41 weights; for 1953-57, 1953-57 weights. Average per-unit production payments made on butterfat and milk have been included for the period October 1943-June 1946. These are not included in the price series for the components.

COL. C. The ratio of the AMS series to the Strauss & Bean series for the period of overlap, 1910-1937, is shown in the Col. C chart. Up through 1929, there is no appreciable difference in trend. The relative rise of the AMS series following 1929 is due to the inclusion of fluid milk retailed directly by farmers in the AMS series and its exclusion in the Strauss & Bean series. The farm retail price of milk dropped only 23% between 1928 and 1932 while the average milk value for all dairy products dropped 49% and the Strauss & Bean price (based on manufactured dairy products) dropped 53%. See Table AP-36.



COL. D. Represents an average unit value for all milk and milk products sold at the farm level. It is derived from values of sales of farm butter, of milk and cream retailed by farmers, of cream sold as butterfat at wholesale, and of whole milk sold at wholesale.

COL. E. The average unit value and the AMS index show very similar relative movements for the period of overlap, as can be seen by comparing the Col. E chart with that for Col. C. See also notes to Col. C.



COL. F. The dairy products price series for the early years must be used with caution, because of its reliance on butter prices whose movements are subject to question. See Table AP-37.

AP-36. MILK: Price

	AMS 180, milk, retail (¢ per qt.)	BLS, N. Y. wholesale (1926 = 100)	Col. D / Col. B × 100	Preferred series, AMS farm price wholesale ($ per 100 lb.)
	A	B	C	D
1890		42.1		
1891		42.6		
1892		42.8		
1893		44.2		
1894		42.1		
1895		40.9		
1896		38.4		
1897		38.5		
1898		39.0		
1899		40.9		
1900		43.5		
1901		42.0		
1902		45.3		
1903		45.3		
1904		43.6		
1905		45.5		
1906		47.0		
1907		51.4		
1908		50.6		
1909	6.4	51.8		
1910	6.6	55.6	2.84	1.58
1911	6.7	51.5	2.95	1.52
1912	6.9	56.1	2.83	1.59
1913	7.1	56.9	2.83	1.61
1914	7.2	53.4	3.00	1.60
1915	7.1	53.9	2.93	1.58
1916	7.4	58.2	2.97	1.73
1917	8.9	81.4	2.92	2.38
1918	10.6	99.5	2.97	2.96
1919	11.9	108.4	3.04	3.29
1920	12.8	108.9	2.96	3.22
1921	11.2	96.0	2.40	2.30
1922	10.4	94.5	2.23	2.11
1923	10.9	98.7	2.52	2.49
1924	11.1	88.4	2.51	2.22
1925	11.2	99.2	2.40	2.38
1926	11.3	100.0	2.38	2.38
1927	11.3	103.0	2.44	2.51
1928	11.5	105.6	2.39	2.52
1929	11.5	110.3	2.29	2.53
1930	11.3	106.2	2.08	2.21
1931	10.1	95.2	1.78	1.69
1932	8.9	65.7	1.95	1.28
1933	8.6	67.1	1.94	1.30
1934	9.4	84.2	1.84	1.55
1935	9.8	90.8	1.89	1.72
1936	10.1	95.2	1.97	1.88
1937	10.5	87.2	2.28	1.99
1938	10.3	81.6	2.12	1.73
1939	10.3	78.3	2.16	1.69
1940	10.3	89.3	2.04	1.82
1941	10.8	92.7	2.36	2.19
1942	11.8	104.0	2.48	2.58
1943	12.7	114.8	2.72	3.12
1944	13.2	119.6	2.68	3.21
1945	13.4	119.9	2.66	3.19
1946	15.2	144.1	2.77	3.99
1947	17.5	159.7	2.67	4.27
1948	18.8	184.2	2.65	4.88
1949	18.6			3.95
1950	18.5			3.89
1951	19.9			4.58
1952	20.8			4.85
1953	20.9			4.32
1954	20.6			3.97
1955	20.7			4.00
1956	21.0			4.14
1957	21.3			4.21

AP-36, SOURCES

COL. A, AMS Stat. Bull. 180, Table 40, p. 42, weighted average price received by farmers, milk, retail; *Ag. Stat. 1959*, p. 389.

COL. B, BLS *Wholesale Prices* Bulls., New York fresh fluid milk, code No. 44, made relative to 1926 as 100.

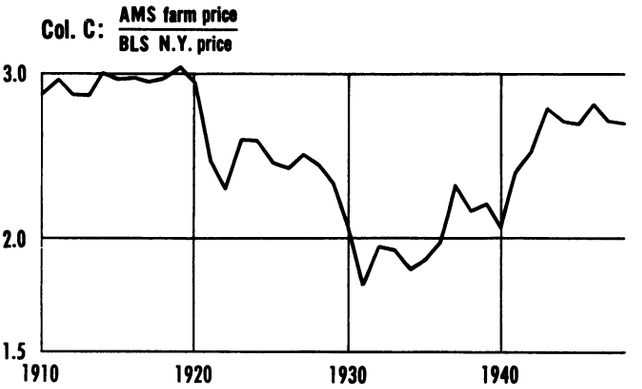
COL. C, Ratio, Col. D/Col. B.

COL. D, Preferred series. AMS Stat. Bull. 180, Table 39, p. 41, wholesale farm price; *Ag. Stat. 1959*, p. 389.

AP-36, NOTES

COL. A. AMS Stat. Bull. 180 presents two farm price series for fluid milk. One, in Col. A, is for milk retailed directly by farmers. The other, Col. D, is for milk sold wholesale by farmers to processing plants. Quantity of milk retailed by farmers decreased from about ten percent of milk wholesaled in 1924 to about one percent in 1955.

COL. C. The chart shows the ratio of the AMS wholesale farm price to the BLS New York price. The dissimilarities of movement clearly indicate that the New York market price has little relevance to the price of milk sold wholesale by farmers in the United States and that the former cannot be used as a basis for extrapolating a milk price series back to 1890.



AP-37. BUTTER: Price

(prices in cents per lb.)

	AMS, butter fat in cream, farm price	S & B, butter, farm price	Col. A / Col. B	Col. B × 1.026	Wisconsin farm prices: Dairy butter, farm price	Wisconsin farm prices: Butter fat, farm price	S & B, butter price, N.Y.	Preferred series, city: BAE-AMS, wholesale butter price, N.Y.	BLS, extra N.Y. (1926 = 100)	Col. I / Col. L	Col. I / Col. G	Preferred series, farm: butterfat, farm price
	A	B	C	D	E	F	G	H	I	J	K	L
1870		28		29	21.0			38.1				29
1871		24		25	15.6			33.6				25
1872		24		25	14.6			32.0				25
1873		25		26	18.0			35.4				26
1874		27		28	21.8			36.2				28
1875		23		24	19.2			32.8				24
1876		21		22	18.4			31.3				22
1877		18		18	16.3			28.5				18
1878		16		16	13.2			27.3				16
1879		15		15	13.6			24.2				15
1880		19		20	16.5			30.5				20
1881		21		22	17.2			31.8				22
1882		24		25	19.2			35.6				25
1883		20		20	16.9			31.2				20
1884		19		20	16.0			30.3				20
1885		17		17	14.1			26.6				17
1886		17		17	14.4			26.8				17
1887		18		18	15.7			26.7				18
1888		18		18	16.8			27.5				18
1889		17		17	15.3			24.4				17
1890		16		16	14.3		18	23.7	51	3.2	2.8	16
1891		18		18	17.1		22	26.2	58	3.2	2.6	18
1892		19		20	18.9		22	26.3	59	3.0	2.7	20
1893		21		22	21.1		24	27.1	61	2.8	2.5	22
1894		18		18	17.2	22.3	22	23.0	52	2.9	2.4	18
1895		15		15	14.9	19.6	19	21.2	48	3.2	2.5	15
1896		14		14	13.4	17.5	17	18.5	42	3.0	2.5	14
1897		14		14	13.6	17.4	17	19.0	43	3.1	2.5	14
1898		14		14	14.2	18.0	18	19.6	44	3.1	2.4	14
1899		15		15	15.2	22.2	19	21.3	48	3.2	2.5	15
1900		17		17	16.9	20.3	21	22.2	51	3.0	2.4	17
1901		17		17	15.7	21.5	20	21.4	49	2.9	2.4	17
1902		19		20	18.3	23.8	23	24.7	56	2.8	2.4	20
1903		18		18	17.8	23.1	22	23.4	53	2.9	2.4	18
1904		17		17	17.0	20.6	20	21.7	49	2.9	2.4	17
1905		19		20	19.2	24.0	23	24.6	56	2.8	2.4	20
1906		19		20	19.2	24.2	23	24.6	56	2.8	2.4	20
1907		21		22	22.6	27.1	27	28.1	64	2.9	2.4	22
1908		22		23	22.6	27.4	26	27.6	61	2.6	2.3	23
1909	25.5	24	1.06	25	27.0	30.5	29	29.9	66	2.5	2.3	26
1910	26.4	26	1.02	27	28.9	30.5	30	31.1	68	2.6	2.3	26
1911	23.2	23	1.01	24	25.3	27.1	28	27.9	60	2.6	2.1	23
1912	26.7	26	1.03	27	28.5	30.6	31	31.6	71	2.6	2.3	27
1913	27.4	27	1.01	28	29.4	32.6	33	32.2	73	2.7	2.2	27
1914	25.5	26	.981	27	28.4	30.0	31	29.8	68	2.6	2.2	26
1915	25.9	26	.996	27	28.3	30.3	31	29.8	67	2.6	2.2	26
1916	29.4	28	1.05	29	32.1	35.0	33	34.0	77	2.7	2.3	29
1917	38.0	36	1.06	37	40.6	45.3	43	42.7	97	2.6	2.3	38
1918	45.4	44	1.03	45	48.2	54.0	51	51.5	116	2.6	2.3	45
1919	53.3	51	1.04	52	57.7	64.9	60	60.7	137	2.6	2.3	53
1920	55.5	55	1.01	56	59.1	62.9	64	61.4	138	2.5	2.2	56
1921	37.0	38	.974	39	41.7	41.7	46	43.3	98	2.6	2.1	37
1922	35.9	36	.997	37	38.6	39.0	42	40.6	91	2.5	2.2	36
1923	42.2	41	1.03	42	45.7	46.8	49	46.9	106	2.5	2.2	42
1924	40.4	40	1.01	41	42.5	43.6	46	42.6	96	2.4	2.1	40
1925	42.4	41	1.03	42	44.2	46.3	48	45.3	102	2.4	2.1	42
1926	41.6	42	.990	43	43.9	45.7	48	44.4	100	2.4	2.1	42
1927	44.5	43	1.03	44	47.0	50.3	50	47.3	107	2.4	2.1	44
1928	46.1	44	1.05	45	47.8	51.5	50	47.4	107	2.3	2.1	46
1929	45.2	44	1.03	45	46.5	48.7	50	45.0	101	2.2	2.0	45
1930	34.5	37	.932	38	37.0	38.8	42	36.5	82	2.4	2.0	34
1931	24.8	28	.886	29	27.8	28.7	32	28.3	64	2.6	2.0	25
1932	17.9	21	.852	22	20.7	21.8	24	21.0	47	2.6	2.0	18
1933	18.8	20	.940	20			24	21.6	49	2.6	2.0	19
1934	22.7	23	.987	24			27	25.7	58	2.5	2.1	23
1935	28.1	27	1.04	28			32	29.8	67	2.4	2.1	28
1936	32.2	29	1.11	30				33.1	74	2.3		32
1937	33.3	30	1.11	31				34.4	77	2.3		33
1938	26.3							28.0	63	2.4		26
1939	23.9							26.0	59	2.5		24
1940	28.0							29.5	66	2.4		28
1941	34.2							34.3	77	2.3		34
1942	39.6							40.1	90	2.2		40
1943	49.9							44.8	99	2.0		50
1944	50.3							42.2	94	1.9		50
1945	50.3							42.8	95	1.9		50
1946	64.3							62.8	142	2.2		64
1947	71.8							71.3	160	2.2		72
1948	79.9							75.8	171	2.1		80
1949	61.6							61.5	139	2.2		62
1950	62.0							62.2	140	2.3		62
1951	71.2							69.9	157	2.2		71
1952	75.0							73.0	165	2.2		75
1953	66.5							66.6	150	2.3		66
1954	58.7							60.5	137	2.3		59
1955	57.7							58.2	131	2.3		58
1956	59.4							59.9	135	2.3		59
1957	60.5							60.7	137	2.3		60

AP-37, SOURCES

COL. A, AMS Stat. Bull. 180, Table 38, butterfat in cream, price received by farmers, weighted average; *Ag. Stat. 1959*, p. 389.

COL. B, Strauss & Bean, Table 40, butter, farm price.

COL. C, Ratio, Col. A/Col. B.

COL. D, Col. B times the average of the 1909-13 ratios in Col. C (ratio, 1.026).

COL. E, Mortenson, Erdman, and Draxter: *Wisconsin Farm Prices 1841-1932*, (Wisconsin Agricultural Experiment Station, Research Bulletin 119, November 1933), Table 17, dairy butter, state average farm price, Wisconsin.

COL. F, *Ibid.*, Table 18, butterfat: state average farm price, Wisconsin.

COL. G, Strauss & Bean, Table 41, New York butter price.

COL. H, *Hist. Stat. 1949*, series E-166, and *Stat. Abstract 1955* and *1959*, (source, BAE-AMS), wholesale price, butter, New York.

COL. I, BLS *Wholesale Prices* Bulls., butter, creamery, extra New York, relative price index.

COL. J, Ratio, Col. I/Col. L.

COL. K, Ratio, Col. I/Col. G.

COL. L, Preferred series

1870-1908. Col. D, transcribed.

1909-57. Col. A, transcribed.

AP-37, NOTES

COL. A. The price received by farmers for butterfat in cream has been computed for 1909-23 by weighting U.S. monthly prices by quantities sold, and for 1924-57 by weighting state weighted average prices by quantities sold. It "excludes production payments which were made from October 1943 through June 1946." Another series, representing the price of farm butter, has been discontinued. The production of farm butter was less than that of factory butter in 1917 and has decreased steadily ever since.

COL. B. The Strauss & Bean farm price of butter "includes farm prices of the following States: since 1869, New York, Wisconsin, Maryland, Virginia, Maine, Illinois; since 1895, Nebraska." The series represents price of farm and factory butter. No further information is available on the series.

COL. E. "The series representing the state average is composed of approximately ten local market series distributed rather uniformly over the state. Some business records obtained from local stores were incorporated into the average." The difference in trend between this series and the Wisconsin series for butterfat is evidently due to differential changes in quality. The authors report that "the butter produced locally brought a low price, especially during summer months, because of such extremely poor quality that a great portion of it was unfit for human consumption." The introduction of the Babcock Test and the cream separator in the early 1890's led to the development of large scale dairies and a more standardized product. The quality of farm butter improved to match the quality of creamery butter, with a concomitant rise in price.

COL. F. "The butterfat price series represents prices paid for milk or cream bought on a butterfat basis and utilized for the manufacture of creamery butter. This series . . . represents at times as many as 20 records."

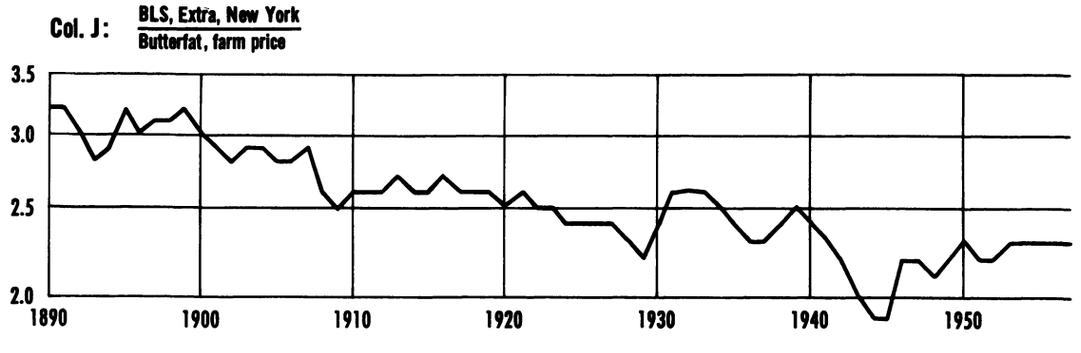
COL. G. The New York butter price, used in Strauss & Bean as a means of obtaining the New York cheese price, is not further identified. There is no available explanation for the difference in movement between this series and the BAE-AMS New York series (Col. H).

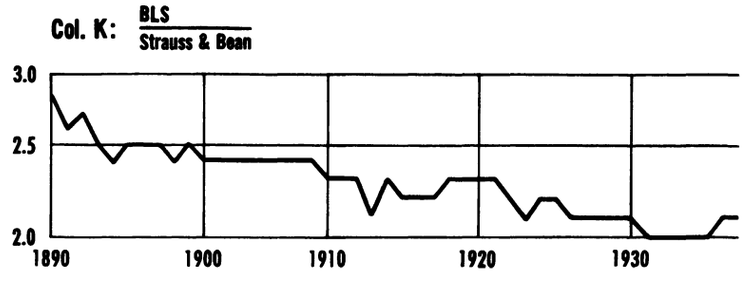
COL. H. The figures are "annual averages of monthly figures from sources and for grades as follows: 1870-79, average of high and low for 2 days each week, high grade, New York shipping and commercial list; 1880-95 average of monthly range, creamery extras, annual reports of New York Chamber of Commerce; 1896-1920, average of daily quotations for extra fresh, specials, extras and firsts, or fresh extras, *New York Produce Review and American Creamery*, published by Urner-Barry Company; 1921 to date, 92-score creamery butter, daily market reports of U.S. Department of Agriculture."

Several series compiled from the Bureau of Labor Statistics have been compared with this series and in only one case is there any evidence of a difference in trend. The New York wholesale price for "firsts," which is available for 1890 through 1945, shows a slight upward trend for 1890-1915 relative to the series given in Col. I. The BLS series for extras at New York, 1890-1957, for extras at Elgin, Illinois, and at St. Louis, Missouri, 1890-1945, and for extras at Chicago, 1913-1948, all show relative movements identical to those of the prices in Col. I.

COL. J. The Col. J chart shows a falling ratio of BLS New York price to farm price—perhaps due to improved transportation and refrigeration making cheaper sources available to New York. The decline appears to have stopped since World War II.

(continued on next page)

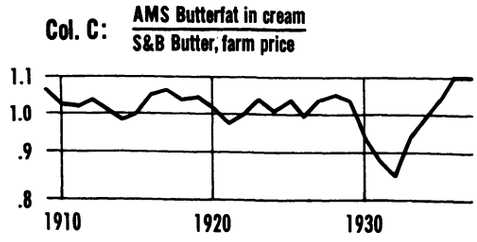




AP-37, NOTES (continued)

COL. K. The Col. K chart, however, shows the decline of the BLS (as well as the BAE-AMS) New York series relative to the Strauss and Bean New York series. We have no clue to the reason for this disparity of movement.

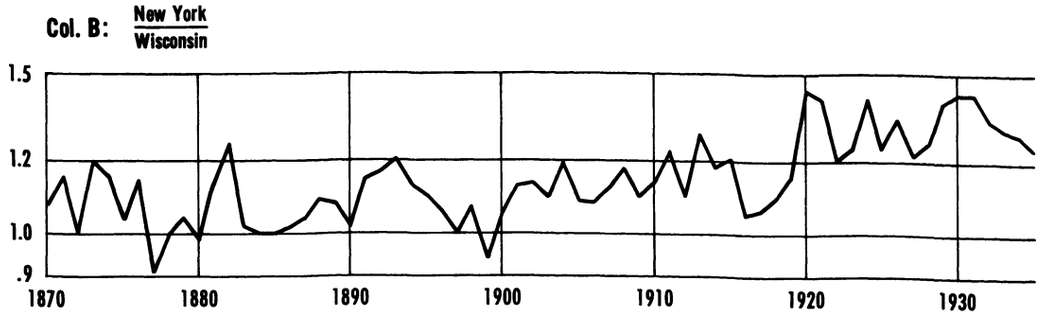
COL. L. The Col. C chart shows the ratio of the AMS series to the Strauss & Bean series. Although the levels of the series differ slightly, the relationship between the two series is steady. The two series have been spliced, on this basis, to obtain a consistent long-term representation of butter price. The small table below, however, shows that there is considerable difference in trend between this and other available series. Between 1870-74 and 1910-14, the New York wholesale market price falls about 15%, the Wisconsin dairy price rises over 50%, and the Strauss & Bean farm price shows no change. There are also dissimilarities in trend between the Strauss & Bean New York series and the BLS and BAE-AMS series (cols. I and H vs. G), for which the explanation is not clear: it may be due to a rising average quality of butter priced by Strauss & Bean.



Butter Price Indexes (1910-14 = 100)

	Strauss & Bean		*BAE-AMS*		*Wisconsin*	
	N. Y. (Col. G)	Farm (Col. B)	N. Y. (Col. H)	Farm (Col. A)	Dairy (Col. E)	Butterfat (Col. F)
1870-74	103	100	117	...	64	...
1895-99	60	54	67	...	52	63
1910-14	100	100	100	100	100	100
1925-29	163	165	154	169	165	162
1950-54	...	...	224	258	...	...

AP-38, NOTES



AP-38. CHEESE: Price

	Strauss & Bean New York cheese price (¢ per lb.)	Col. A / Col. D	Strauss & Bean, weighted average cheese price (¢ per lb.)	Preferred series, Strauss & Bean and Dairy Stat., Wisc. cheese (¢ per lb.)
	A	B	C	D
1870	14.8	1.08	15	13.7
1871	14.3	1.16	14	12.3
1872	13.3	1.01	13	13.2
1873	14.8	1.20	15	12.3
1874	15.7	1.16	15	13.5
1875	13.3	1.03	13	12.9
1876	12.4	1.15	12	10.8
1877	10.5	.91	11	11.5
1878	9.5	1.01	9	9.4
1879	8.6	1.04	9	8.3
1880	11.4	.99	11	11.5
1881	12.5	1.13	12	11.1
1882	14.5	1.26	14	11.5
1883	11.5	1.02	11	11.3
1884	11.5	1.00	12	11.5
1885	9.5	1.00	10	9.5
1886	10.0	1.02	10	9.8
1887	11.0	1.04	11	10.6
1888	11.0	1.09	11	10.1
1889	10.0	1.08	10	9.3
1890	9.0	1.02	9	8.8
1891	11.0	1.15	11	9.6
1892	11.0	1.17	11	9.4
1893	12.0	1.21	11	9.9
1894	11.0	1.13	11	9.7
1895	9.5	1.10	9	8.6
1896	8.5	1.06	8	8.0
1897	8.5	1.00	8	8.5
1898	9.0	1.07	9	8.4
1899	9.5	.94	10	10.1
1900	10.5	1.05	10	10.0
1901	11.1	1.13	11	9.8
1902	12.8	1.14	12	11.2
1903	12.2	1.10	12	11.1
1904	11.1	1.19	10	9.3
1905	12.8	1.09	12	11.7
1906	12.8	1.08	12	11.8
1907	15.0	1.12	14	13.4
1908	14.4	1.18	13	12.2
1909	16.1	1.10	15	14.6
1910	16.7	1.14	16	14.7
1911	15.6	1.23	14	12.7
1912	17.2	1.10	16	15.6
1913	18.3	1.28	16	14.3
1914	17.2	1.18	16	14.6
1915	17.2	1.21	15	14.2
1916	18.3	1.05	18	17.5
1917	23.9	1.06	23	22.5
1918	28.3	1.09	26	25.9
1919	33.3	1.15	30	29.0
1920	35.6	1.43	27	24.9
1921	25.6	1.40	20	18.3
1922	23.3	1.21	20	19.3
1923	27.2	1.23	23	22.1
1924	25.6	1.41	20	18.2
1925	26.7	1.24	23	21.5
1926	26.7	1.33	23	20.1
1927	27.8	1.22	24	22.7
1928	27.8	1.26	23	22.1
1929	27.8	1.38	22	20.2
1930	23.3	1.42	18	16.4
1931	17.8	1.42	14	12.5
1932	13.3	1.33	11	10.0
1933	13.3	1.30	11	10.2
1934	15.0	1.28	12	11.7
1935	17.8	1.24	13	14.3
1936			14	15.3
1937			14	15.9
1938				12.6
1939				12.8
1940				14.3
1941				19.4
1942				21.6
1943				23.2
1944				23.2
1945				23.2
1946				34.8
1947				36.0
1948				40.7
1949				30.4
1950				30.8
1951				37.5
1952				38.7
1953				35.7
1954				32.3
1955				31.6
1956				32.8
1957				33.3

AP-38, SOURCES

Col. A, Strauss & Bean, Table 41, estimated New York cheese price.

Col. B, Ratio, Col. A/Col. D.

Col. C, Strauss & Bean, Table 41, weighted average cheese price.

Col. D, Preferred series

1870-1909. Strauss & Bean, Table 41, Wisconsin cheese, price per lb.

1910-55. USDA, *Dairy Statistics*, Statistical Bulletin 134, May 1956, Table 58, cheese, American cheddars, wholesale price on Wisconsin cheese exchange.

1956-57. *Dairy Statistics*, Statistical Bulletin 218, Oct. 1957, p. 286.

AP-38, NOTES

Col. A. Strauss & Bean estimated the New York price of cheese on the basis of butter prices in New York, increasing the cheese price from about 43% of the butter price to 55% of the price between 1870 and 1935.

Col. B. See chart on facing page.

Col. C. The Strauss & Bean weighted average price is a combination of the Wisconsin price and the New York estimated price. The weight was shifted from ten to one for New York in 1870 to one and a half to one in 1900 to one to four for 1915-37.

Col. D. The two Wisconsin estimates that make up this series are identical for the period of overlap, 1910-35, except for slight differences in six years. This has been chosen as the preferred series because it is the only long-term consistent series available. There is apparently no current series like Strauss & Bean's weighted average.

AP-39. WOOL: Price

	Strauss & Bean, farm price (¢ per lb.)	Ag. Stat. (¢ per lb.)	BLS (1926 100)	Col. E Col. C	Preferred series (¢ per lb.)
	A	B	C	D	E
1870	22.2				22.2
1871	27.4				27.4
1872	31.7				31.7
1873	26.5				26.5
1874	25.7				25.7
1875	25.7				25.7
1876	19.7				19.7
1877	21.4				21.4
1878	18.8				18.8
1879	18.0				18.0
1880	23.1				23.1
1881	22.2				22.2
1882	20.5				20.5
1883	17.1				17.1
1884	14.5				14.5
1885	14.5				14.5
1886	16.3				16.3
1887	18.0				18.0
1888	17.1				17.1
1889	18.0				18.0
1890	17.1				17.1
1891	16.3				16.3
1892	16.3				16.3
1893	14.5				14.5
1894	11.1				11.1
1895	10.3				10.3
1896	10.3				10.3
1897	11.1				11.1
1898	13.7				13.7
1899	14.5				14.5
1900	13.7				13.7
1901	13.7				13.7
1902	13.7				13.7
1903	15.4				15.4
1904	16.3				16.3
1905	22.2				22.2
1906	23.1				23.1
1907	20.5				20.5
1908	16.3				16.3
1909	22.2	22.2			22.2
1910	21.8	21.7			21.7
1911	16.1	15.8			15.8
1912	17.5	17.3			17.3
1913	17.0	16.7	49.1	.34	16.7
1914	16.8	16.6	53.1	.31	16.6
1915	22.3	22.1	64.5	.34	22.1
1916	26.7	26.1	72.8	.36	26.1
1917	41.6	41.6	139.0	.30	41.6
1918	57.7	57.7	163.7	.35	57.7
1919	49.5	49.5	156.7	.32	49.5
1920	44.8	45.5	135.3	.34	45.5
1921	17.4	17.3	65.4	.26	17.3
1922	27.7	27.1	102.7	.26	27.1
1923	39.6	39.4	118.2	.33	39.4
1924	37.8	36.6	125.5	.29	36.6
1925	40.2	39.5	121.0	.33	39.5
1926	35.2	34.0	100.0	.34	34.0
1927	31.5	30.3	97.0	.31	30.3
1928	37.8	36.2	106.1	.34	36.2
1929	31.0	30.2	93.4	.32	30.2
1930	20.2	19.5	68.9	.28	19.5
1931	13.7	13.6	54.8	.25	13.6
1932	8.6	8.6	41.7	.21	8.6
1933	21.0	20.6	61.3	.34	20.6
1934	21.7	21.9	75.2	.29	21.9
1935	19.9	19.3	67.7	.29	19.3
1936	28.0	26.9	83.8	.32	26.9
1937	32.9	32.0	92.6	.35	32.0
1938		19.1	63.4	.30	19.1
1939		22.3	73.3	.30	22.3
1940		28.4	87.5	.32	28.4
1941		35.5	98.6	.36	35.5
1942		40.1	108.1	.37	40.1
1943		41.7	109.6	.38	41.7
1944		42.4	110.4	.38	42.4
1945		41.9	110.5	.38	41.9
1946		42.3	95.3	.44	42.3
1947		42.0	113.5	.37	42.0
1948		49.2	138.6	.35	49.2
1949		49.4	140.6	.35	49.4
1950		62.1	169.4	.37	62.1
1951		97.1	234.6	.41	97.1
1952		54.1	140.8	.38	54.1
1953		54.9	145.2	.38	54.9
1954		53.2	146.0	.36	53.2
1955		42.6	126.1	.34	42.6
1956		44.2	120.5	.37	44.2
1957		53.4	144.2	.37	53.4

AP-39, SOURCES

COL. A, Strauss & Bean, p. 105, wool, farm price.

COL. B

1909-44. *Ag. Stat. 1952*, Table 499, wool, average price per pound received by farmers.

1945-57. *Ag. Stat. 1959*, Table 513.

COL. C, BLS *Wholesale Prices* Bulls., territory wool, scoured, half-blood, at Boston, 1926 = 100 (the BLS figures for 1947 through 1957, relative to 1947-49 = 100 (Code 01-42-06), have been spliced to the earlier figures at 1947).

COL. D, Ratio, Col. E/Col. C.

COL. E, Preferred series

1870-1908. Col. A, transcribed.

1909-57. Col. B, transcribed.

AP-40. TEA: Price

	Average unit value in foreign markets (¢ per lb.)
	A
1870	29.4
1871	34.1
1872	36.5
1873	37.7
1874	37.4
1875	34.7
1876	30.5
1877	27.3
1878	23.6
1879	24.2
1880	27.4
1881	25.7
1882	24.6
1883	23.5
1884	20.2
1885	19.5
1886	19.6
1887	18.7
1888	15.8
1889	16.0
1890	15.0
1891	17.0
1892	16.0
1893	16.0
1894	15.1
1895	13.5
1896	13.5
1897	13.1
1898	13.9
1899	13.1
1900	12.4
1901	12.3
1902	12.4
1903	14.4
1904	16.2
1905	15.8
1906	15.6
1907	16.1
1908	17.3
1909	16.2
1910	16.0
1911	17.2
1912	18.0
1913	18.4
1914	18.4
1915	18.1
1916	18.8
1917	18.6
1918	20.4
1919	24.9
1920	27.0
1921	18.6
1922	24.5
1923	28.2
1924	29.3
1925	31.2
1926	32.7
1927	31.6
1928	30.3
1929	28.9
1930	26.6
1931	21.6
1932	13.1
1933	14.2
1934	21.3
1935	19.9
1936	21.7
1937	22.5
1938	22.5
1939	21.6
1940	22.9
1941	27.2
1942	37.0
1943	32.4
1944	33.5
1945	34.9
1946	36.3
1947	40.7
1948	49.3
1949	48.5
1950	47.1
1951	47.0
1952	41.9
1953	44.0
1954	54.3
1955	61.9
1956	50.6
1957	49.5

AP-41. COFFEE: Price

	Average unit value in foreign markets (¢ per lb.)
	A
1870	10.3
1871	9.8
1872	12.7
1873	15.0
1874	19.3
1875	15.8
1876	16.7
1877	16.2
1878	16.8
1879	12.5
1880	13.5
1881	12.5
1882	10.0
1883	8.2
1884	9.3
1885	8.2
1886	7.6
1887	10.7
1888	14.0
1889	13.0
1890	16.0
1891	19.0
1892	20.0
1893	14.0
1894	16.4
1895	14.7
1896	14.6
1897	11.1
1898	7.5
1899	6.5
1900	6.7
1901	7.4
1902	6.5
1903	6.5
1904	7.0
1905	8.8
1906	8.6
1907	7.9
1908	7.6
1909	7.5
1910	7.9
1911	10.3
1912	13.3
1913	13.8
1914	11.1
1915	9.5
1916	9.6
1917	10.1
1918	9.0
1919	19.6
1920	19.5
1921	10.7
1922	12.9
1923	13.5
1924	17.5
1925	22.3
1926	21.6
1927	18.4
1928	21.3
1929	20.4
1930	13.1
1931	10.0
1932	9.1
1933	7.8
1934	8.7
1935	7.8
1936	7.7
1937	8.9
1938	6.9
1939	6.9
1940	6.2
1941	7.9
1942	12.0
1943	12.4
1944	12.5
1945	12.7
1946	17.2
1947	24.1
1948	25.1
1949	27.2
1950	44.8
1951	50.6
1952	51.3
1953	52.7
1954	65.7
1955	52.2
1956	51.2
1957	57.3

AP-40 (Tea), SOURCES

COL. A

1870-1955. *Stat. Abstract 1916*, p. 720, *1929*, p. 334, *1950*, p. 294, *1953*, p. 316, *1956*, p. 333, *1957*, p. 338, *1958*, p. 342. Average unit value per pound in foreign markets, fiscal years 1870-1918, calendar years 1919-55 (source, Bureau of the Census; Bureau of Foreign and Domestic Commerce).

1956-57. *Quarterly Summary of Foreign Commerce*, Jan.-Dec. 1956, 1957, p. 22 (Tea, 1521).

AP-41 (Coffee), SOURCES

COL. A

1870-1955. *Stat. Abstract, 1916*, p. 720, *1929*, p. 334, *1950*, p. 294, *1953*, p. 316, *1956*, p. 333, *1957*, p. 338, *1958*, p. 342. Average unit value per pound in foreign markets, fiscal years 1870-1918, calendar years 1919-55 (source, Bureau of the Census; Bureau of Foreign and Domestic Commerce).

1956-57. *Survey Cur. Bus.*, Feb. 1958, p. S-30.

AP-42. COCOA: Price

	Stat. Abstract ($ per lb.)	Bus. Stat. & BLS ($ per lb.)	Col. B / Col. A	Preferred series, price on N.Y. market or average unit value ($ per lb.)
	A	B	C	D
1888	.137			.137
1889	.128			.128
1890	.127			.127
1891	.131			.131
1892	.147			.147
1893	.164			.164
1894	.136			.136
1895	.109			.109
1896	.103			.103
1897	.095			.095
1898	.136			.136
1899	.143			.143
1900	.136			.136
1901	.141			.141
1902	.130			.130
1903	.123			.123
1904	.123			.123
1905	.116			.116
1906	.109			.109
1907	.145			.145
1908	.172			.172
1909	.114			.114
1910	.105			.105
1911	.105			.105
1912	.109			.109
1913	.124			.124
1914	.118			.118
1915	.119			.119
1916	.144			.144
1917	.118			.118
1918	.103			.103
1919	.148			.148
1920	.158			.158
1921	.076			.076
1922	.093			.093
1923	.082	.074	.902	.082
1924	.078	.075	.962	.078
1925	.100	.097	.970	.097
1926	.100	.116	1.16	.116
1927	.134	.160	1.19	.160
1928	.124	.129	1.04	.129
1929		.104		.104
1930		.080		.080
1931		.052		.052
1932		.044		.044
1933		.044		.044
1934		.052		.052
1935		.050		.050
1936		.069		.069
1937		.084		.084
1938		.053		.053
1939		.049		.049
1940		.051		.051
1941		.076		.076
1942		.089		.089
1943		.089		.089
1944		.089		.089
1945		.089		.089
1946		.116		.116
1947		.350		.350
1948		.398		.398
1949		.215		.215
1950		.322		.322
1951		.356		.356
1952		.354		.354
1953		.371		.371
1954		.577		.577
1955		.374		.374
1956		.272		.272
1957		.304		.304

AP-42, SOURCES

COL. A, *Stat. Abstract 1897*, p. 179, and *1901*, p. 176, average unit value derived from import quantity and value figures; *Stat. Abstract 1929*, p. 335, average unit value, dollars per pound (Bureau of Foreign and Domestic Commerce).

COL. B, *Bus. Stat. 1938*, p. 113, and *1955*, p. 144. Prices 1923-42, Scarburgh Co.; 1943-55, BLS New York market price, dollars per pound; 1955-57, BLS *Wholesale Prices* Bull., cocoa beans, Accra (series 01-81-21).

COL. C, Ratio, Col. B/Col. A.

COL. D, Preferred series

1888-1924. Col. A, transcribed.

1925-57. Col. B, transcribed.

AP-42, NOTES

For 1919 and prior years, figures are averages for years ending June 30; 1920 and following, years ending December 31.

It is apparent from the ratios in Col. C that average unit value of imports may vary considerably from the price of a given grade on the New York market; so our preferred series is not consistent throughout.

AP-43. SILK: Price

	BLS Bull., Italian Classical ($ per lb.)	Textile Organon ($ per lb.)	Col. A × 0.9311	Preferred series ($ per lb.)
	A	B	C	D
1890	5.22		4.86	4.86
1891	4.19		3.90	3.90
1892	4.48		4.17	4.17
1893	5.03		4.68	4.68
1894	3.68		3.43	3.43
1895	4.04		3.76	3.76
1896	3.62		3.37	3.37
1897	3.64		3.39	3.39
1898	3.88		3.61	3.61
1899	4.77		4.44	4.44
1900	4.51		4.20	4.20
1901	3.85		3.58	3.58
1902	4.11		3.83	3.83
1903	4.52		4.21	4.21
1904	3.86		3.59	3.59
1905	4.11		3.83	3.83
1906	4.32		4.02	4.02
1907	5.58		5.20	5.20
1908	4.18		3.89	3.89
1909	4.38		4.08	4.08
1910	4.00		3.72	3.72
1911	3.89		3.62	3.62
1912	3.81	3.45	3.55	3.55
1913	4.38	3.64	4.08	4.08
1914	4.34	3.69	4.04	4.04
1915	3.63	3.32	3.38	3.38
1916	5.95	5.54	5.54	5.54
1917		6.27		6.27
1918		6.96		6.96
1919		9.64		9.64
1920		9.08		9.08
1921		6.57		6.57
1922		7.65		7.65
1923		8.65		8.65
1924		6.25		6.25
1925		6.57		6.57
1926		6.19		6.19
1927		5.44		5.44
1928		5.07		5.07
1929		4.93		4.93
1930		3.41		3.41
1931		2.40		2.40
1932		1.56		1.56
1933		1.61		1.61
1934		1.29		1.29
1935		1.63		1.63
1936		1.76		1.76
1937		1.86		1.86
1938		1.69		1.69
1939		2.71		2.71
1940		2.77		2.77
1941		2.94		2.94
1942		n.a.		n.a.
1943		n.a.		n.a.
1944		n.a.		n.a
1945		n.a.		n.a
1946		n.a.		n.a.
1947		4.55		4.55
1948		2.60		2.60
1949		3.00		3.00
1950		3.46		3.46
1951		n.a.		n.a
1952		5.16		5.16
1953		5.30		5.30
1954		4.92		4.92
1955		4.59		4.59
1956		4.49		4.49
1957		4.49		4.49

AP-43, SOURCES

COL. A, BLS *Wholesale Prices* Bulls., Italian Classical.

COL. B

1916-50. *Textile Organon*, Vol. 23, No. 1, p. 37.

1952-54. *Textile Organon*, Vol. 27, No. 2, p. 30.

1955-57. BLS *Wholesale Prices* Bulls. (series 01-44-01).

COL. C, Col. A times the ratio of Col. B to Col. A for 1916 (ratio, 0.9311).

COL. D, Preferred series

1890-1915. Col. C, transcribed.

1916-57. Col. B, transcribed.

AP-43, NOTES

COL. D. The BLS series for Italian Classical silk ends in 1916 but is spliced to a series for Japanese Filatures, special extra, on that year. The latter series agrees absolutely with the *Textile Organon* series for the years of overlap, 1916-1928. On the basis of this agreement, the series in Col. A has been adjusted to that in Col. B to secure a long-term series for the price of silk.

AP-44. RUBBER: Price

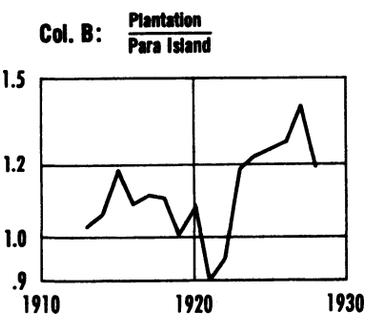
	BLS Bull., wholesale price (Para Island) ($ per lb.)	Col. C / Col. A	Preferred series
	A	B	C
1890	.838		.903
1891	.791		.853
1892	.676		.729
1893	.717		.773
1894	.674		.727
1895	.743		.801
1896	.800		.862
1897	.845		.911
1898	.927		.999
1899	.995		1.07
1900	.982		1.06
1901	.850		.916
1902	.727		.784
1903	.905		.976
1904	1.09		1.18
1905	1.24		1.34
1906	1.21		1.30
1907	1.06		1.14
1908	.871		.939
1909	1.48		1.60
1910	1.91		2.06
1911	1.11		1.20
1912	1.05		1.13
1913	.807	1.02	.820
1914	.616	1.06	.653
1915	.557	1.18	.657
1916	.669	1.08	.725
1917	.648	1.11	.722
1918	.549	1.10	.602
1919	.483	1.00	.485
1920	.333	1.08	.359
1921	.182	.901	.164
1922	.183	.951	.174
1923	.248	1.19	.296
1924	.212	1.23	.261
1925	.569	1.26	.719
1926	.380	1.28	.485
1927	.268	1.40	.376
1928	.186	1.20	.223
1929			.205
1930			.119
1931			.061
1932			.034
1933			.060
1934			.129
1935			.124
1936			.164
1937			.194
1938			.147
1939			.176
1940			.202
1941			.224
1942			.225
1943			.225
1944			.225
1945			.225
1946			.225
1947			.208
1948			.219
1949			.176
1950			.413
1951			.609
1952			.386
1953			.241
1954			.234
1955			.390
1956			.343
1957			.311

AP-44, SOURCES

COL. A, BLS *Wholesale Prices* Bulls., rubber (Para Island).
COL. B, Ratio, Col. C/Col. A.
COL. C, Preferred series

1890-1912. Col. A times the geometric average of the ratios found in Col. B for 1913-20 (ratio, 1.078).
1913-20. BLS *Wholesale Prices* Bulls., rubber (plantation, ribbed, smoked sheets, N. Y.).
1921-28. *Bus. Stat. 1938*, p. 148, same specifications.
1929-53. *Bus. Stat. 1955*, p. 179, same specifications.
1954-57. BLS *Wholesale Prices* Bulls., series 07-11-02.

AP-44, NOTES



Agriculture: Output (AO)

AO-1. AGRICULTURE: Output

	Crops	Feed grain & forage	Corn, end uses	Livestock	Agriculture total output ($ billion)		
	(billion dollars, 1954 prices)				1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G
1870	3.99	2.31	.14	4.13	1.62	3.24	6.0
1871	3.93	2.38	.15	4.42	1.69	3.36	6.1
1872	4.40	2.63	.17	4.63	1.80	3.59	6.6
1873	4.07	2.21	.14	4.53	1.78	3.57	6.5
1874	4.15	2.29	.14	4.41	1.76	3.56	6.4
1875	5.08	2.95	.20	4.52	1.85	3.81	6.9
1876	5.09	3.04	.21	4.75	1.91	3.89	7.0
1877	5.64	3.21	.23	5.28	2.15	4.38	7.9
1878	5.86	3.34	.23	5.46	2.23	4.54	8.2
1879	6.22	3.55	.26	5.53	2.30	4.71	8.5
1880	6.55	3.54	.25	5.54	2.38	4.89	8.8
1881	5.36	2.95	.17	5.61	2.24	4.59	8.2
1882	7.16	3.88	.23	5.67	2.50	5.14	9.2
1883	6.61	3.88	.22	6.13	2.49	5.14	9.1
1884	7.50	4.35	.26	6.47	2.68	5.51	9.9
1885	7.43	4.54	.28	6.53	2.64	5.48	9.7
1886	7.32	4.21	.23	6.35	2.64	5.49	9.7
1887	6.89	3.89	.20	6.41	2.62	5.48	9.6
1888	8.23	5.05	.30	6.55	2.73	5.75	10.0
1889	8.56	5.25	.33	6.86	2.87	5.99	10.5
1890	7.45	4.12	.21	6.88	2.83	5.92	10.4
1891	9.61	5.35	.32	7.78	3.38	6.86	12.4
1892	8.15	4.65	.25	6.09	2.71	5.60	9.8
1893	8.08	4.65	.26	6.18	2.71	5.61	9.9
1894	8.12	4.12	.21	6.53	2.94	6.07	10.7
1895	9.27	5.48	.35	6.86	3.03	6.37	11.0
1896	9.76	5.79	.41	7.60	3.28	6.90	12.0
1897	9.75	5.38	.38	7.95	3.46	7.24	12.7
1898	10.50	5.58	.37	8.12	3.64	7.64	13.4
1899	10.40	5.96	.43	8.36	3.60	7.65	13.2
1900	10.37	5.87	.41	8.38	3.63	7.72	13.3
1901	9.13	4.46	.22	8.33	3.61	7.62	13.2
1902	11.43	6.39	.37	7.97	3.66	7.79	13.4
1903	10.73	5.96	.33	8.50	3.71	7.89	13.6
1904	11.64	6.37	.37	8.52	3.85	8.25	14.2
1905	11.76	6.85	.41	8.66	3.86	8.15	14.0
1906	12.49	6.78	.41	8.93	4.14	8.78	15.0
1907	10.88	6.09	.34	9.05	3.96	8.31	14.2
1908	11.42	6.17	.33	9.08	4.04	8.53	14.7
1909	11.30	6.31	.37	8.81	3.93	8.37	14.2
1910	11.64	6.49	.39	9.01	4.02	8.53	14.5
1911	11.49	5.59	.31	9.30	4.27	9.06	15.5
1912	13.10	7.07	.38	9.36	4.34	9.26	15.8
1913	11.50	5.63	.25	9.56	4.32	9.19	15.7
1914	12.96	6.14	.31	9.73	4.61	9.82	16.9
1915	12.13	7.05	.35	9.99	4.6	9.5	16.4
1916	11.61	6.30	.29	10.06	4.3	9.1	15.7
1917	12.44	7.04	.42	9.91	4.3	9.2	15.7
1918	12.59	6.33	.27	10.25	4.6	9.7	16.8
1919	12.56	6.52	.33	9.96	4.5	9.4	16.3
1920	13.85	7.38	.48	9.69	4.6	9.7	16.6
1921	11.53	6.69	.41	10.08	4.3	9.0	15.3
1922	12.30	6.59	.34	10.79	4.7	9.9	16.8
1923	12.43	6.81	.40	11.20	4.8	10.1	17.2
1924	12.45	6.07	.29	11.01	4.9	10.4	17.7
1925	13.11	6.70	.40	10.79	4.8	10.3	17.6
1926	13.31	6.10	.32	11.10	5.1	10.9	18.6
1927	12.91	6.64	.12	11.49	5.0	10.5	17.9
1928	13.63	6.71	.41	11.57	5.3	11.1	18.9
1929	12.97	6.33	.26	11.60	5.1	10.8	18.5
1930	12.41	5.61	.27	11.77	5.2	11.1	18.8
1931	13.74	6.17	.37	12.15	5.5	11.7	20.1
1932	13.06	7.03	.41	12.19	5.2	11.0	18.6
1933	11.25	5.59	.18	12.47	5.0	10.8	18.3
1934	8.71	3.75	-.21	11.21	4.4	9.7	16.0
1935	11.91	6.25	.41	10.63	4.6	10.1	16.7
1936	9.94	4.20	-.04	11.38	4.7	10.2	17.1
1937	14.43	6.46	.87	11.23	5.5	11.8	20.1
1938	13.17	6.53	.62	11.83	5.3	11.3	19.1
1939	12.99	6.39	.48	12.76	5.4	11.8	19.8
1940	13.52	6.73	.27	13.01	5.5	12.0	20.1
1941	13.72	7.07	.20	13.72	5.7	12.3	20.6
1942	15.56	7.98	.21	15.21	6.3	13.8	23.0
1943	14.52	7.45	.15	16.11	6.5	14.2	23.3
1944	15.56	7.68	.51	15.66	6.7	14.5	24.1
1945	14.92	7.55	.16	15.32	6.4	13.9	22.8
1946	15.70	7.87	.77	15.00	6.5	14.3	23.6
1947	15.06	6.40	.11	14.72	6.5	14.1	23.5
1948	17.62	8.42	1.49	14.35	6.9	15.0	25.0
1949	16.64	7.66	.56	15.07	6.8	14.8	24.6
1950	15.79	7.84	.39	15.74	6.7	14.7	24.1
1951	16.29	7.51	.09	16.29	6.9	15.2	25.2
1952	17.21	7.78	.94	16.27	7.3	16.1	26.6
1953	17.11	7.72	.69	16.28	7.3	16.1	26.4
1954	16.73	7.97	.65	16.84	7.2	16.2	26.2
1955	17.37	8.43	.70	17.28	7.3	16.5	26.9
1956	17.39	8.33	.98	17.33	7.5	17.0	27.4
1957	17.33	9.15	.71	17.19	7.2	16.3	26.1

AO-1, SOURCES

COL. A, Crops. Table AO-2, Col. Z, transcribed.

COL. B, Feed grain and forage. Table AO-2, sum of Cols. D through I.

COL. C, Corn, other than feed and seed. Worksheet 1 of this table, Col. D, times $1.43/bushel (1954 price, Table AP-6, Col. G).

COL. D, Livestock. Table AO-27, Col. K, transcribed.

COLS. E and F, Output indicators, 1902 and 1929 prices. Computed exactly as Col. G, except that 1902 and 1929 prices were used as weights in the computation. (For weights, see source tables AO-2 and AO-27.)

COL. G, Output indicator, 1954 prices. Col. A minus Col. B plus Col. C plus Col. D.

AO-1, NOTES

COL. B. A link factor of 1.035 to adjust for the lack of sorghum data was applied to this sum in years prior to 1919.

COL. C. Negative figures represent years when feed uses of corn exceeded production, the difference accounted for by imports and reduction of inventory.

AO-1, WORKSHEET 1. FINAL-PRODUCT USES OF CORN (Nonfeed and Nonseed Uses)

(million bushels)

	AMS, nonfeed & net exports & inventory change	S & B, corn production entering gross income	Col. A / Col. B	Estimate of end-uses
	A	B	C	D
1870		217		98
1871		241		108
1872		269		121
1873		216		97
1874		220		99
1875		310		139
1876		333		150
1877		351		158
1878		361		162
1879		406		183
1880		392		176
1881		266		120
1882		359		162
1883		340		153
1884		404		182
1885		434		195
1886		363		163
1887		317		143
1888		474		213
1889		508		229
1890		331		149
1891		495		223
1892		389		175
1893		405		182
1894		322		145
1895		551		248
1896		640		288
1897		596		268
1898		579		261
1899		663		298
1900		640		288
1901		340		153
1902		576		259
1903		513		231
1904		570		256
1905		644		290
1906		631		284
1907		528		238
1908		506		228
1909		575		259
1910		600		270
1911		488		220
1912		589		265
1913		393		177
1914		488		220
1915		546		246
1916		452		203
1917		654		294
1918		419		189
1919		510		229
1920		742		334
1921		639		288
1922		534		240
1923		621		279
1924		450		202
1925		620		279
1926		498		224
1927	82.8	538	.154	83
1928	289.1	567	.510	289
1929	182.8	490	.373	183
1930	187.1	358	.523	187
1931	260.0	471	.552	260
1932	285.8	587	.487	286
1933	125.2	437	.286	125
1934	-143.7	170	--	-144
1935	290.5	409	.710	290
1936	-30.6	245	--	-31
1937	607.5	489	1.242	607
1938	434.7			435
1939	336.4			336
1940	186.6			187
1941	139.9			140
1942	146.1			146
1943	107.6			108
1944	358.5			358
1945	109.0			109
1946	534.7			535
1947	80.0			80
1948	1040.0			1040
1949	390.9			391
1950	270.4			270
1951	62.4			62
1952	657.0			657
1953	481.7			482
1954	451.6			452
1955	490.6			491
1956	682.5			682
1957	497.2			497

AO-1, Worksheet 1, SOURCES

COL. A, Sum of "Dry-processing products," "Wet-process products," and "Alcohol and distilled spirits," plus exports, minus imports, plus inventory change from preceding year, from AMS. Stat. Bull. 159, p. 14, and supplement for 1959, p. 6.

COL. B, Strauss & Bean, Table 15, Col. 7, production entering into gross income, crop year.

COL. C, Ratio, Col. A/Col. B. The chief reason for the fluctuations in the ratio is inventory changes, included in Col. A but not in Col. B. The ratio of the total in Col. A to the total in Col. B for 1927-37 is 0.45.

COL. D, Estimated output not used for feed or seed
1870-1926. Col. B times 1927-37 ratio in Col. C (0.45).
1927-57. Col. A, transcribed.

AO-1, Worksheet 1, NOTES

COL. D. Negative figures represent years when feed uses of corn exceeded production, the difference accounted for by imports and reduction of inventory.

AO-2. CROPS: Output

	Wheat	Rice	Rye	Corn	Oats	Barley	Sorghum for grain	Sorghum for forage	Hay	Potatoes	Tomatoes (fresh)	Tomatoes (for processing)	Lettuce
	A	B	C	D	E	F	G	H	I	J	K	L	M
1870	.538	.004	.019	1.609	.191	.031			.397	.140			
1871	.577	.003	.021	1.633	.218	.030			.415	.176			
1872	.577	.004	.020	1.829	.232	.035			.448	.174			
1873	.683	.005	.019	1.441	.218	.033			.450	.168			
1874	.755	.005	.021	1.514	.194	.039			.462	.170			
1875	.666	.006	.020	2.074	.260	.035			.482	.234			
1876	.655	.006	.023	2.114	.232	.044			.547	.160			
1877	.840	.006	.026	2.168	.309	.042			.580	.226			
1878	.952	.006	.026	2.237	.315	.040			.635	.186			
1879	.973	.008	.024	2.505	.295	.046			.585	.220			
1880	1.064	.008	.023	2.441	.297	.049			.632	.214			
1881	.861	.008	.023	1.780	.317	.053			.700	.166			
1882	1.170	.007	.032	2.510	.384	.065			.792	.256			
1883	.931	.008	.031	2.362	.431	.062			.894	.295			
1884	1.211	.008	.032	2.786	.456	.073			.890	.270			
1885	.848	.011	.026	2.943	.479	.069			.900	.256			
1886	1.090	.011	.029	2.550	.485	.079			.954	.254			
1887	1.041	.008	.027	2.294	.495	.078			.897	.208			
1888	.899	.009	.034	3.219	.550	.082			1.030	.312			
1889	1.068	.010	.036	3.280	.591	.087			1.114	.283			
1890	.952	.010	.032	2.360	.433	.075			1.117	.221			
1891	1.437	.011	.036	3.340	.595	.102			1.130	.343			
1892	1.297	.018	.035	2.713	.513	.103			1.164	.247			
1893	1.073	.009	.032	2.717	.503	.094			1.180	.265			
1894	1.149	.008	.032	2.309	.533	.080			1.054	.257			
1895	1.149	.012	.036	3.625	.658	.112			.892	.393			
1896	1.109	.007	.039	3.820	.551	.105			1.114	.342			
1897	1.285	.009	.038	3.272	.590	.111			1.227	.257			
1898	1.628	.010	.035	3.362	.599	.106			1.327	.312			
1899	1.389	.018	.031	3.784	.666	.127			1.185	.355			
1900	1.270	.029	.033	3.807	.672	.104			1.089	.338			
1901	1.615	.024	.037	2.454	.569	.134			1.157	.269			
1902	1.456	.042	.041	3.967	.766	.158			1.284	.386			
1903	1.406	.043	.035	3.596	.629	.161			1.375	.359			
1904	1.179	.043	.034	3.842	.720	.179			1.414	.454			
1905	1.497	.028	.038	4.224	.785	.186			1.429	.391			
1906	1.569	.037	.036	4.337	.727	.193			1.290	.443			
1907	1.333	.038	.034	3.738	.570	.163			1.412	.433			
1908	1.363	.045	.035	3.671	.589	.185			1.519	.396			
1909	1.450	.048	.036	3.734	.721	.187			1.454	.507			
1910	1.327	.051	.035	4.080	.786	.153			1.254	.445			
1911	1.310	.047	.038	3.539	.630	.157			1.077	.394			
1912	1.548	.049	.046	4.216	.962	.213			1.435	.528			
1913	1.592	.050	.049	3.249	.739	.172			1.284	.432			
1914	1.904	.048	.051	3.609	.754	.192			1.377	.478			
1915	2.139	.054	.057	4.045	1.020	.224			1.524	.438			
1916	1.346	.081	.052	3.468	.810	.172			1.644	.351			
1917	1.314	.071	.073	4.158	1.026	.197			1.417	.519			
1918	1.916	.082	.101	3.491	1.016	.243			1.372	.450	.037	.038	.012
1919	2.018	.088	.095	3.830	.787	.141	.093	.131	1.542	.386	.038	.027	.013
1920	1.787	.106	.075	4.392	1.027	.185	.111	.133	1.529	.480	.041	.027	.023
1921	1.736	.081	.074	4.187	.743	.144	.089	.113	1.414	.422	.036	.011	.022
1922	1.796	.086	.122	3.871	.816	.165	.062	.087	1.587	.540	.050	.029	.028
1923	1.611	.069	.068	4.111	.872	.172	.078	.088	1.490	.476	.048	.028	.032
1924	1.785	.067	.071	3.179	1.007	.178	.077	.104	1.525	.499	.053	.029	.038
1925	1.418	.068	.051	4.001	.999	.207	.072	.106	1.314	.385	.059	.044	.044
1926	1.764	.086	.042	3.642	.820	.179	.089	.101	1.267	.419	.048	.024	.050
1927	1.855	.091	.062	3.741	.777	.258	.102	.122	1.637	.481	.058	.029	.057
1928	1.938	.090	.046	3.812	.934	.354	.097	.113	1.397	.555	.060	.024	.057
1929	1.747	.081	.043	3.598	.791	.303	.063	.119	1.457	.433	.071	.037	.061
1930	1.878	.092	.055	2.974	.907	.326	.047	.112	1.242	.447	.068	.043	.061
1931	1.997	.091	.040	3.684	.799	.216	.091	.127	1.254	.499	.066	.024	.059
1932	1.603	.085	.047	4.190	.892	.323	.083	.143	1.395	.488	.071	.029	.055
1933	1.170	.077	.025	3.429	.523	.165	.069	.149	1.252	.446	.068	.026	.053
1934	1.115	.080	.020	2.072	.387	.126	.024	.131	1.009	.528	.077	.035	.059
1935	1.331	.081	.069	3.288	.860	.312	.073	.214	1.507	.493	.079	.041	.059
1936	1.336	.102	.029	2.154	.564	.160	.038	.117	1.167	.421	.074	.048	.065
1937	1.853	.110	.059	3.779	.837	.240	.088	.136	1.384	.489	.077	.047	.064
1938	1.950	.108	.068	3.645	.774	.278	.085	.223	1.524	.463	.090	.042	.059
1939	1.571	.111	.047	3.691	.681	.300	.067	.207	1.442	.445	.095	.049	.069
1940	1.728	.112	.048	3.514	.886	.336	.108	.285	1.602	.490	.089	.055	.063
1941	1.997	.106	.053	3.792	.841	.392	.143	.303	1.597	.463	.086	.065	.067
1942	2.054	.133	.064	4.389	.955	.463	.138	.241	1.795	.480	.097	.075	.070
1943	1.789	.134	.035	4.241	.811	.349	.138	.195	1.719	.597	.097	.061	.077
1944	2.247	.142	.027	4.416	.817	.298	.233	.205	1.715	.499	.099	.071	.087
1945	2.349	.140	.029	4.103	1.084	.288	.121	.168	1.790	.545	.114	.062	.091
1946	2.442	.149	.022	4.600	1.051	.286	.134	.145	1.659	.633	.116	.082	.106
1947	2.881	.161	.031	3.368	.836	.305	.117	.101	1.677	.506	.102	.078	.108
1948	2.745	.175	.031	5.155	1.031	.341	.166	.119	1.604	.585	.104	.070	.107
1949	2.328	.186	.022	4.630	.867	.256	.187	.099	1.617	.523	.111	.060	.108
1950	2.160	.177	.026	4.397	.973	.328	.294	.117	1.730	.562	.111	.064	.117
1951	2.095	.211	.026	4.184	.909	.278	.265	.108	1.825	.424	.116	.103	.113
1952	2.769	.220	.019	4.708	.865	.246	.114	.073	1.774	.458	.116	.086	.123
1953	2.487	.241	.023	4.590	.820	.267	.146	.097	1.804	.502	.114	.079	.125
1954	2.086	.293	.031	4.373	1.003	.409	.296	.092	1.797	.476	.124	.066	.126
1955	1.982	.255	.035	4.619	1.069	.433	.306	.122	1.879	.491	.131	.080	.130
1956	2.128	.226	.026	4.941	.827	.407	.260	.081	1.812	.528	.126	.113	.138
1957	2.016	.196	.033	4.893	.925	.471	.701	.133	2.024	.520	.124	.080	.137

(billion dollars; 1954 price weights except as noted)

	Apples	Oranges (including tangerines)	Sugarcane	Sugar beets	Tobacco	Cotton	Cottonseed	Soybeans	Peanuts	Flaxseed	All crops		
											1902 weights	1929 weights	1954 weights
	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1870	.094		.007		.176	.677			.001	.007	1.174	2.232	3.988
1871	.110		.006		.167	.464			.001	.009	1.180	2.227	3.926
1872	.151		.005		.197	.613			.002	.010	1.306	2.486	4.404
1873	.090		.004		.195	.650			.002	.012	1.215	2.285	4.069
1874	.160		.006		.111	.593	.005		.002	.014	1.251	2.353	4.152
1875	.115		.007		.311	.723	.007		.002	.015	1.489	2.862	5.081
1876	.218		.008		.238	.692	.006		.002	.017	1.506	2.860	5.086
1877	.202		.006		.317	.755	.009		.002	.019	1.671	3.174	5.645
1878	.245		.010		.233	.798	.011		.003	.020	1.749	3.291	5.860
1879	.209		.007		.241	.919	.014		.003	.022	1.833	3.490	6.223
1880	.310		.011		.240	1.069	.011		.003	.023	1.922	3.671	6.555
1881	.191		.007		.218	.864	.018		.004	.024	1.630	3.011	5.365
1882	.261		.012		.296	1.148	.024		.004	.025	2.137	4.019	7.161
1883	.184		.012	*	.260	.928	.024		.004	.026	2.041	3.775	6.613
1884	.254		.009	*	.296	.919	.030		.005	.027	2.266	4.206	7.499
1885	.254		.012	*	.312	1.070	.035		.005	.028	2.247	4.206	7.429
1886	.232	.004	.008	*	.311	1.062	.042		.005	.028	2.238	4.135	7.323
1887	.175	.004	.015	*	.240	1.158	.050		.006	.029	2.117	3.879	6.893
1888	.288	.006	.013	*	.338	1.163	.048		.006	.030	2.505	4.692	8.228
1889	.254	.006	.012	*	.268	1.255	.053		.007	.032	2.633	4.869	8.565
1890	.142	.008	.020	*	.331	1.439	.062		.008	.058	2.288	4.200	7.450
1891	.353	.008	.015	*	.382	1.502	.065		.009	.051	2.902	5.432	9.613
1892	.214	.010	.020	.001	.387	1.119	.063		.010	.036	2.518	4.589	8.149
1893	.205	.011	.024	.002	.392	1.249	.086		.011	.032	2.493	4.569	8.082
1894	.238	.010	.029	.002	.392	1.686	.101		.013	.032	2.453	4.546	8.123
1895	.389	.006	.021	.003	.381	1.202	.087		.014	.065	2.779	5.283	9.271
1896	.414	.006	.025	.003	.388	1.432	.098		.016	.054	2.928	5.540	9.761
1897	.290	.011	.028	.004	.359	1.847	.127		.018	.040	2.946	5.468	9.751
1898	.209	.010	.022	.003	.464	1.938	.142		.021	.056	3.167	5.864	10.500
1899	.310	.013	.013	.007	.445	1.571	.150		.024	.061	3.135	5.872	10.403
1900	.367	.019	.024	.007	.435	1.701	.146		.025	.049	3.091	5.847	10.368
1901	.241	.015	.029	.015	.453	1.598	.190		.027	.084	2.774	5.101	9.134
1902	.378	.019	.029	.018	.491	1.786	.197		.028	.110	3.452	6.475	11.435
1903	.346	.023	.022	.019	.499	1.655	.195		.030	.077	3.264	6.072	10.732
1904	.414	.027	.033	.019	.438	2.259	.201		.031	.069	3.515	6.630	11.640
1905	.243	.025	.031	.025	.480	1.778	.189		.033	.088	3.596	6.663	11.757
1906	.385	.028	.021	.039	.497	2.230	.232		.035	.084	3.724	7.054	12.488
1907	.211	.028	.031	.037	.453	1.867	.154		.037	.073	3.318	6.194	10.877
1908	.265	.036	.032	.034	.427	2.225	.221		.040	.063	3.478	6.480	11.425
1909	.265	.034	.026	.041	.539	1.680	.197		.043	.060	3.471	6.457	11.298
1910	.256	.040	.028	.041	.584	1.951	.248		.047	.035	3.493	6.585	11.645
1911	.385	.037	.028	.048	.481	2.637	.297		.045	.057	3.352	6.443	11.487
1912	.409	.025	.013	.055	.571	2.302	.276		.044	.086	3.952	7.427	13.097
1913	.247	.050	.024	.059	.507	2.380	.292		.047	.046	3.454	6.486	11.499
1914	.427	.046	.019	.058	.530	2.712	.348		.051	.039	3.851	7.285	12.959
1915	.369	.044	.011	.070	.591	1.880	.253		.059	.034	4.019	7.395	13.132
1916	.331	.051	.024	.066	.617	1.924	.271		.081	.036	3.575	6.565	11.608
1917	.283	.022	.019	.061	.678	1.899	.257		.121	.026	3.790	7.031	12.445
1918	.295	.046	.022	.061	.738	2.023	.269		.115	.039	3.822	7.046	12.589
1919	.256	.047	.010	.058	.738	1.919	.241		.084	.021	3.809	7.019	12.563
1920	.378	.064	.014	.087	.771	2.257	.247		.085	.033	4.176	7.806	13.852
1921	.175	.043	.026	.081	.514	1.334	.175		.083	.025	3.567	6.538	11.528
1922	.346	.062	.024	.054	.641	1.640	.194		.064	.032	3.810	7.032	12.296
1923	.331	.073	.013	.070	.776	1.704	.198		.069	.051	3.788	7.066	12.428
1924	.292	.057	.007	.087	.636	2.291	.277	.012	.087	.095	3.810	7.067	12.453
1925	.279	.066	.011	.073	.703	2.706	.333	.012	.088	.068	3.887	7.345	13.107
1926	.407	.076	.004	.072	.659	3.022	.384	.013	.081	.057	3.890	7.438	13.306
1927	.211	.062	.006	.087	.619	2.178	.277	.017	.103	.077	3.934	7.306	12.907
1928	.324	.107	.011	.085	.702	2.433	.306	.020	.103	.058	4.096	7.735	13.626
1929	.247	.061	.017	.081	.783	2.491	.303	.023	.110	.049	3.869	7.241	12.969
1930	.286	.105	.017	.096	.842	2.341	.283	.034	.085	.066	3.695	6.985	12.407
1931	.371	.095	.014	.092	.800	2.874	.339	.043	.129	.036	3.996	7.689	13.740
1932	.261	.099	.021	.108	.520	2.185	.274	.038	.115	.035	3.952	7.445	13.060
1933	.263	.088	.020	.131	.701	2.193	.251	.033	.100	.021	3.301	6.382	11.253
1934	.236	.120	.021	.092	.554	1.620	.206	.057	.124	.017	2.566	5.074	8.710
1935	.297	.098	.030	.094	.665	1.788	.226	.121	.141	.045	3.601	6.854	11.912
1936	.218	.102	.034	.104	.594	2.084	.273	.083	.154	.016	2.941	5.651	9.937
1937	.317	.140	.036	.102	.802	3.185	.399	.114	.150	.022	4.198	8.135	14.430
1938	.229	.144	.046	.134	.708	2.007	.257	.153	.157	.024	3.933	7.529	13.168
1939	.281	.142	.040	.131	.961	1.986	.245	.223	.148	.060	3.788	7.416	12.992
1940	.241	.161	.026	.140	.746	2.112	.271	.193	.216	.094	4.018	7.783	13.516
1941	.270	.161	.033	.119	.645	1.805	.239	.264	.180	.098	4.070	7.925	13.719
1942	.265	.169	.036	.129	.719	2.154	.273	.464	.268	.125	4.595	8.977	15.556
1943	.196	.202	.039	.074	.718	1.921	.240	.469	.265	.153	4.285	8.523	14.520
1944	.268	.213	.034	.078	.997	2.055	.263	.474	.254	.066	4.471	8.956	15.558
1945	.151	.198	.037	.095	1.017	1.516	.191	.477	.249	.105	4.433	8.644	14.920
1946	.265	.221	.033	.113	1.183	1.452	.185	.501	.249	.069	4.584	9.101	15.696
1947	.243	.216	.030	.137	1.077	1.993	.245	.459	.266	.124	4.401	8.639	15.061
1948	.198	.197	.037	.102	1.012	2.501	.324	.561	.285	.167	5.078	10.085	17.617
1949	.274	.206	.041	.116	1.006	2.711	.354	.578	.228	.131	4.738	9.552	16.639
1950	.272	.231	.044	.150	1.037	1.682	.211	.739	.248	.123	4.535	9.245	15.793
1951	.229	.232	.033	.115	1.192	2.546	.335	.701	.202	.106	4.616	9.377	16.288
1952	.211	.238	.047	.112	1.153	2.544	.336	.739	.165	.092	4.904	9.876	17.208
1953	.214	.248	.049	.135	1.052	2.766	.382	.664	.192	.115	4.898	9.869	17.112
1954	.250	.258	.048	.152	1.147	2.302	.315	.842	.123	.126	4.757	9.757	16.735
1955	.234	.260	.045	.130	1.121	2.474	.335	.924	.189	.126	4.913	10.133	17.370
1956	.227	.260	.044	.146	1.112	2.237	.300	1.109	.196	.146	4.850	10.200	17.390
1957	.263	.212	.042	.163	.852	1.842	.257	1.195	.175	.079	4.795	10.220	17.333

(Sources and Notes on next page)

AO-2. CROPS: Output (Continued)

AO-2, SOURCES

Output Indictor, 1954 Price Weights:

COL. A, Wheat. Table AO-3, Col. B, times $2.12/bu.

COL. B, Rice. Table AO-4, Col. E, times $4.57/cwt.

COL. C, Rye. Table AO-5, Col. A, times $1.21/bu.

COL. D, Corn. Table AO-6, Col. C, times $1.43/bu.

COL. E, Oats. Table AO-8, Col. A, times $0.711/bu.

COL. F, Barley. Table AO-7, Col. A, times $1.08/bu.

COL. G, Sorghum for grain. Table AO-9, Col. A, times $1.26/bu.

COL. H, Sorghum for forage. Table AO-9, Col. E, times $17.70/ton.

COL. I, Hay. Table AO-10, Col. F, times $16.67/ton.

COL. J, Potatoes. Table AO-12, Col. A, times $1.30/bu.

COL. K, Tomatoes (fresh). Table AO-13, Col. D, times $3.48/bu. ($6.28/cwt.).

COL. L, Tomatoes (for processing). Table AO-13, Col. H, times $24.30/ton.

COL. M, Lettuce. Table AO-14, Col. D, times $4.05/cwt. (*Ag. Stat. 1957*, Table 336).

COL. N, Apples. Table AO-17, Col. F, times $2.25/bu.

COL. O, Oranges (including tangerines). Table AO-19, Col. F, times $1.91/box.

COL. P, Sugarcane

1870-1928. Table AO-20, Col. A, times $78.40/ton—1954 price of cane, $6.94/ton (Table AP-17), divided by sugar/ton of cane, 177/2000 (*Ag. Stat. 1959*, p. 84).

1929-1957. Table AO-20, Col. C, times $78.40/ton.

COL. Q, Sugar beets

1870-1928. Table AO-20, Col. B, times $74.50/ton—1954 farm value of beet output (*Ag. Stat. 1959*, p. 80) divided by beet sugar output (Table AO-20).

1929-1957. Table AO-20, Col. D, times $74.50/ton.

COL. R, Tobacco. Table AO-21, Col. B, times $.511/lb.

COL. S, Cotton. Table AO-22, Col. A, times $0.3361/lb. or $168.05/500-lb. bale.

COL. T, Cottonseed. Table AO-23, Col. E, times $60.30/ton.

COL. U, Soybeans. Table AO-24, Col. A, times $2.47/bu.

COL. V, Peanuts. Table AO-25, Col. D, times $0.122/lb.

COL. W, Flaxseed. Table AO-26, Col. A, times $3.05/bu.

COLS. X and Y, Output indicators, 1902 and 1929 prices. Computed exactly as Col. Z, except that 1902 and 1929 prices were used as weights in the computation. (For weights, see notes.)

COL. Z, Output indicator, all crops, 1954 prices. Sum, Cols. A through W, linked for missing series.

AO-2, NOTES

* Less than $500,000.

Where not otherwise indicated, the prices used for weighting are taken from our tables on prices (AP-1 *et seq.*).

COLS. X and Y. The weights used in the computation of the 1902- and 1929-weighted output indicators are as follows:

	Commodity	*1902 price weights*	*1929 price weights*
A	Wheat	$.630/bu.	$1.03/bu.
B	Rice	1.69/cwt.	2.22/cwt.
C	Rye	.500/bu.	.844/bu.
D	Corn	.401/bu.[1]	.799/bu.[1]
E	Oats	.305/bu.	.418/bu.
F	Barley	.453/bu.	.539/bu.
G	Sorghum: grain	n.a.	.745/bu.
H	Sorghum: forage	n.a.	9.98/ton
I	Hay	8.61/ton	10.90/ton
J	Potatoes	.474/bu.	1.316/bu.
K	Tomatoes: fresh	n.a.	3.10/cwt.
L	Tomatoes: for processing	n.a.	15.25/ton
M	Lettuce	n.a.	2.43/cwt.
N	Apples	.46/bu.	1.39/bu.
O	Oranges	.80/box	3.61/box
P	Sugarcane	46./ton	53.4/ton
Q	Sugar beets	31.9/ton	47.6/ton
R	Tobacco		
S	Cotton	38.0/bale	83.9/bale
T	Cottonseed	15.8/ton	30.9/ton
U	Soybeans	n.a.	1.86/bu.
V	Peanuts	.034/lb.	.0369/lb.
W	Flaxseed	1.05/bu.	2.81/bu.

[1] These prices are from *Ag. Stat. 1957*, pp. 34 and 35, and represent average value of corn weighted by production in the different states, instead of the average value weighted by sales in the different states, as given in Table AP-6.

AO-3. WHEAT: Output

(million bushels)

	Census	Preferred series, Department of Agriculture
	A	B
1870		254
1871		272
1872		272
1873		322
1874		356
1875		314
1876		309
1877		396
1878		449
1879	459	459
1880		502
1881		406
1882		552
1883		439
1884		571
1885		400
1886		514
1887		491
1888		424
1889	468	504
1890		449
1891		678
1892		612
1893		506
1894		542
1895		542
1896		523
1897		606
1898		768
1899	659	655
1900		599
1901		762
1902		687
1903		663
1904		556
1905		706
1906		740
1907		629
1908		643
1909	683	684
1910		626
1911		618
1912		730
1913		751
1914		898
1915		1009
1916		635
1917		620
1918		904
1919	945	952
1920		843
1921		819
1922		847
1923		760
1924	801	842
1925		669
1926		832
1927		875
1928		914
1929	801	824
1930		886
1931		942
1932		756
1933		552
1934	513	526
1935		628
1936		630
1937		874
1938		920
1939	709	741
1940		815
1941		942
1942		969
1943		844
1944	1033	1060
1945		1108
1946		1152
1947		1359
1948		1295
1949	1007	1098
1950		1019
1951		988
1952		1306
1953		1173
1954	909	984
1955		935
1956		1004
1957		951

AO-3, SOURCES

COL. A, Census of Agriculture, as given in *Agricultural Statistics.*

COL. B, Preferred series

1870-1949. *Ag. Stat. 1952*, p. 1.

1950-57. *Ag. Stat. 1959*, p. 1.

AO-4. RICE: Output

	Ag. Stat., production (mil. bags)	Strauss & Bean, crop year, production (mil. bu.)	Col. A / Col. B	Col. B × 0.4500	Preferred series, production, crop year (mil. bags of 100 lb.)
	A	B	C	D	E
1870		1.98		.89	.89
1871		1.41		.63	.63
1872		1.88		.85	.85
1873		2.24		1.01	1.01
1874		2.44		1.10	1.10
1875		3.02		1.36	1.36
1876		3.12		1.40	1.40
1877		2.80		1.26	1.26
1878		2.93		1.32	1.32
1879		3.96		1.78	1.78
1880		4.0		1.8	1.8
1881		3.7		1.7	1.7
1882		3.6		1.6	1.6
1883		4.0		1.8	1.8
1884		3.9		1.8	1.8
1885		5.4		2.4	2.4
1886		5.6		2.5	2.5
1887		4.1		1.8	1.8
1888		4.5		2.0	2.0
1889		4.6		2.1	2.1
1890		4.9		2.2	2.2
1891		5.6		2.5	2.5
1892		8.6		3.9	3.9
1893		4.4		2.0	2.0
1894		4.0		1.8	1.8
1895		6.1		2.7	2.7
1896		3.5		1.6	1.6
1897		4.2		1.9	1.9
1898		4.9		2.2	2.2
1899		9.0		4.0	4.0
1900		14.0		6.3	6.3
1901		11.5		5.2	5.2
1902		20.2		9.1	9.1
1903		21.1		9.5	9.5
1904		21.1		9.5	9.5
1905		13.6		6.1	6.1
1906		17.9		8.1	8.1
1907		18.7		8.4	8.4
1908		21.9		9.9	9.9
1909	10.61	23.6	.450	10.6	10.6
1910	11.13	24.7	.451	11.1	11.1
1911	10.20	22.7	.449	10.2	10.2
1912	10.66	23.7	.450	10.7	10.7
1913	10.89	24.2	.450	10.9	10.9
1914	10.56	23.5	.449	10.6	10.6
1915	11.75	26.1	.450	11.7	11.8
1916	17.80	39.5	.451	17.8	17.8
1917	15.62	34.7	.450	15.6	15.6
1918	18.00	40.0	.450	18.0	18.0
1919	19.31	42.7	.452	19.2	19.3
1920	23.24	51.6	.450	23.2	23.2
1921	17.67	39.3	.450	17.7	17.7
1922	18.75	41.7	.450	18.8	18.8
1923	14.96	33.2	.451	14.9	15.0
1924	14.69	32.6	.451	14.7	14.7
1925	14.87	32.7	.455	14.7	14.9
1926	18.91	41.4	.457	18.6	18.9
1927	20.02	44.4	.451	20.0	20.0
1928	19.72	43.4	.454	19.5	19.7
1929	17.79	39.5	.450	17.8	17.8
1930	20.22	44.9	.450	20.2	20.2
1931	20.08	44.6	.450	20.1	20.0
1932	18.73	41.6	.450	18.7	18.7
1933	16.94	37.7	.449	17.0	16.9
1934	17.57	39.0	.451	17.6	17.6
1935	17.75	38.8	.457	17.5	17.8
1936	22.42	49.0	.458	22.0	22.4
1937	24.04	53.4	.450	24.0	24.0
1938	23.63				23.6
1939	24.33				24.3
1940	24.50				24.5
1941	23.10				23.1
1942	29.08				29.1
1943	29.26				29.3
1944	30.97				31.0
1945	30.67				30.7
1946	32.50				32.5
1947	35.22				35.2
1948	38.28				38.3
1949	40.77				40.8
1950	38.82				38.8
1951	46.09				46.1
1952	48.19				48.2
1953	52.83				52.8
1954	64.19				64.2
1955	55.9				55.9
1956	49.5				49.5
1957	42.9				42.9

AO-4, SOURCES

COL. A
- 1909-48. *Ag. Stat. 1952*, Table 28, rice, rough.
- 1949-54. *Ag. Stat. 1956*, Table 22.
- 1955-57. *Ag. Stat. 1959*, Table 25.

COL. B, Strauss & Bean, Table 28, production, crop year.

COL. C, Ratio, Col. A/Col. B.

COL. D, Col. B times the average of the ratios found in Col. C for 1909-13 (ratio, 0.4500) (1 bushel = .45 bag).

COL. E, Preferred series
- 1870-1908. Col. D, transcribed.
- 1909-57. Col. A, transcribed.

AO-4, NOTES

The *Agricultural Statistics* series is not identified as "crop year," but the overlap with Strauss & Bean is identical to their crop year series (cf. Col. C), not to the calendar year series.

AO-5. RYE: Output

	Rye, production (mil. bu.)
	A
1870	15.6
1871	17.0
1872	16.8
1873	16.1
1874	17.3
1875	16.9
1876	19.3
1877	21.9
1878	21.8
1879	19.8
1880	19.3
1881	19.2
1882	26.7
1883	25.4
1884	26.6
1885	21.7
1886	23.9
1887	22.5
1888	28.4
1889	29.5
1890	26.4
1891	29.6
1892	28.7
1893	26.7
1894	26.8
1895	29.6
1896	31.9
1897	31.1
1898	29.0
1899	26.0
1900	27.4
1901	30.8
1902	33.9
1903	28.9
1904	28.5
1905	31.2
1906	29.6
1907	28.2
1908	28.6
1909	30.1
1910	29.1
1911	31.4
1912	37.9
1913	40.4
1914	42.1
1915	46.8
1916	43.1
1917	60.4
1918	83.6
1919	78.8
1920	62.1
1921	61.2
1922	101.1
1923	56.1
1924	58.5
1925	42.4
1926	35.0
1927	51.2
1928	38.1
1929	35.4
1930	45.4
1931	32.8
1932	39.1
1933	20.6
1934	16.3
1935	56.9
1936	24.2
1937	48.9
1938	56.0
1939	38.6
1940	39.7
1941	43.9
1942	52.9
1943	28.7
1944	22.5
1945	23.7
1946	18.5
1947	25.5
1948	25.9
1949	18.1
1950	21.4
1951	21.5
1952	16.1
1953	18.9
1954	25.9
1955	29.1
1956	21.2
1957	27.2

AO-5, SOURCES

COL. A

1870-1916. Strauss & Bean, Table 19, production, crop year.
1917-49. *Ag. Stat. 1952*, Table 18, production.
1950-57. *Ag. Stat. 1959*, Table 17, production.

AO-5, NOTES

The Strauss & Bean and *Agricultural Statistics* series are identical for years of overlap.

AO-6. CORN: Output

(million bushels)

	Census, corn for grain	USDA, corn for grain	Preferred series, USDA, all corn
	A	B	C
1870			1125
1871			1142
1872			1279
1873			1008
1874			1059
1875			1450
1876			1478
1877			1516
1878			1564
1879	1755		1752
1880			1707
1881			1245
1882			1755
1883			1652
1884			1948
1885			2058
1886			1783
1887			1605
1888			2251
1889	2122		2294
1890			1650
1891			2336
1892			1897
1893			1900
1894			1615
1895			2535
1896			2671
1897			2288
1898			2351
1899	2666		2646
1900			2662
1901			1716
1902			2774
1903			2515
1904			2687
1905			2954
1906			3033
1907			2614
1908			2567
1909	2552		2611
1910			2853
1911			2475
1912			2948
1913			2273
1914			2524
1915			2829
1916			2425
1917			2908
1918			2441
1919	2346	2342	2679
1920		2695	3071
1921		2557	2928
1922		2229	2707
1923		2430	2875
1924	1824	1860	2223
1925		2382	2798
1926		2140	2547
1927		2218	2616
1928		2261	2666
1929	2131	2135	2516
1930		1757	2080
1931		2230	2576
1932		2579	2930
1933		2105	2398
1934	1169	1147	1449
1935		2001	2299
1936		1259	1506
1937		2349	2643
1938		2300	2549
1939	2311	2342	2581
1940		2207	2457
1941		2414	2652
1942		2802	3069
1943		2668	2966
1944	2788	2802	3088
1945		2577	2869
1946		2916	3217
1947		2108	2355
1948		3307	3605
1949	2778	2946	3238
1950		2764	3075
1951		2629	2926
1952		2981	3292
1953		2882	3210
1954	2613	2708	3058
1955		2884	3230
1956		3090	3455
1957		3060	3422

AO-6, SOURCES

COL. A

1879-1944. Census, as given in *Ag. Stat. 1952*, Table 38, p. 35, production, harvested as grain.

1949-54. Census, as given in *Ag. Stat. 1956*, Table 34, p. 27, production, harvested as grain.

COL. B

1919-1948. Department of Agriculture, as given in *Ag. Stat. 1952*, Table 38, p. 35, production, harvested as grain.

1949-55. Department of Agriculture, as given in *Ag. Stat. 1956*, Table 34, p. 27, production, harvested as grain.

1955-57. *The National Food Situation*, p. 77.

COL. C, Preferred series

1870-1943. *Ag. Stat. 1952*, Table 38, p. 35, production, all corn (including grain, silage, grazed, etc.).

1944-57. *Ag. Stat. 1959*, Table 38, p. 29, same designation.

AO-7. BARLEY: Output

	Ag. Stat., barley production (mil. bu.)
	A
1870	29.0
1871	27.7
1872	32.0
1873	30.5
1874	36.1
1875	32.8
1876	40.7
1877	39.2
1878	37.4
1879	42.4
1880	45.3
1881	49.0
1882	60.1
1883	57.1
1884	67.9
1885	64.0
1886	73.5
1887	72.4
1888	76.0
1889	80.8
1890	69.9
1891	94.2
1892	95.2
1893	87.1
1894	74.2
1895	104
1896	97.5
1897	103
1898	98.2
1899	118
1900	96.6
1901	124
1902	146
1903	149
1904	166
1905	172
1906	179
1907	151
1908	171
1909	173
1910	142
1911	145
1912	197
1913	159
1914	178
1915	207
1916	159
1917	182
1918	225
1919	131
1920	171
1921	133
1922	153
1923	159
1924	165
1925	192
1926	166
1927	239
1928	328
1929	281
1930	302
1931	200
1932	299
1933	153
1934	117
1935	289
1936	148
1937	222
1938	257
1939	278
1940	311
1941	363
1942	429
1943	323
1944	276
1945	267
1946	265
1947	282
1948	316
1949	237
1950	304
1951	257
1952	228
1953	247
1954	379
1955	401
1956	377
1957	436

AO-8. OATS: Output

	Ag. Stat., oats production (mil. bu.)
	A
1870	268
1871	306
1872	327
1873	307
1874	273
1875	365
1876	327
1877	435
1878	443
1879	415
1880	418
1881	446
1882	540
1883	606
1884	641
1885	674
1886	682
1887	696
1888	773
1889	831
1890	609
1891	837
1892	722
1893	707
1894	750
1895	925
1896	775
1897	830
1898	842
1899	937
1900	945
1901	800
1902	1077
1903	885
1904	1012
1905	1104
1906	1023
1907	801
1908	829
1909	1014
1910	1106
1911	886
1912	1353
1913	1039
1914	1060
1915	1435
1916	1139
1917	1443
1918	1429
1919	1107
1920	1444
1921	1045
1922	1148
1923	1227
1924	1416
1925	1405
1926	1153
1927	1093
1928	1313
1929	1113
1930	1275
1931	1124
1932	1255
1933	736
1934	544
1935	1210
1936	793
1937	1177
1938	1089
1939	958
1940	1246
1941	1183
1942	1343
1943	1140
1944	1149
1945	1524
1946	1478
1947	1176
1948	1450
1949	1220
1950	1369
1951	1278
1952	1217
1953	1153
1954	1410
1955	1503
1956	1163
1957	1301

AO-7 (Barley), SOURCES

COL. A

1870-1908. *Ag. Stat. 1936*, Table 63, pp. 51-52.
1909-50. *Ag. Stat. 1952*, Table 62, p. 56.
1951-55. *Ag. Stat. 1956*, Table 55, p. 40.
1955-57. *The National Food Situation*, July 1958, p. 54.

AO-8 (Oats), SOURCES

COL. A

1870-1948. *Ag. Stat. 1952*, Table 53, p. 47.
1949-55. *Ag. Stat. 1956*, Table 47, p. 35.
1955-57. *Ag. Stat. 1959*, Table 55, p. 41.

AO-9. SORGHUM: Output

	Preferred series, grain, production (mil. bu.)	Ag. Stat. 1942, forage, production (mil. tons)	Ag. Stat. 1952 & 1959, forage, production (mil. tons)	Col. C / Col. B	Preferred series, forage, (mil. tons)
	A	B	C	D	E
1919	74.0	4.4			7.4
1920	87.7	4.5			7.5
1921	71.0	3.8			6.4
1922	49.5	2.9			4.9
1923	61.6	3.0			5.0
1924	61.1	3.5			5.9
1925	57.2	3.6			6.0
1926	70.8	3.4			5.7
1927	81.1	4.1			6.9
1928	76.8	3.8			6.4
1929	50.0	4.0	6.7	1.675	6.7
1930	37.6	3.7	6.3	1.703	6.3
1931	71.9	3.7	7.2	1.946	7.2
1932	66.1	4.5	8.1	1.800	8.1
1933	54.4	3.5	8.4	2.400	8.4
1934	19.2	3.9	7.4	1.897	7.4
1935	57.6	6.8	12.1	1.779	12.1
1936	30.3	3.8	6.6	1.737	6.6
1937	69.9	3.6	7.7	2.139	7.7
1938	67.2	4.6	12.6	2.739	12.6
1939	53.3	4.2	11.7	2.786	11.7
1940	85.8	5.4	16.1	2.981	16.1
1941	113.5	4.7[p]	17.1		17.1
1942	109.7		13.6		13.6
1943	109.5		11.0		11.0
1944	185.0		11.6		11.6
1945	96.1		9.5		9.5
1946	106.0		8.2		8.2
1947	93.2		5.7		5.7
1948	131.4		6.7		6.7
1949	148.5		5.6		5.6
1950	233.5		6.6		6.6
1951	162.9		6.1		6.1
1952	90.7		4.1		4.1
1953	115.7		5.5		5.5
1954	235.3		5.2		5.2
1955	242.5		6.9		6.9
1956	206.2		4.6		4.6
1957	564.3		7.5		7.5

AO-9, SOURCES

COL. A, Preferred series, grain
1919-28. *Ag. Stat. 1942*, Table 119, grain, production.
1929-57. *Ag. Stat. 1952*, Table 72, and *1959*, Table 73, grain, production.
COL. B, *Ag. Stat.* 1942, Table 119, forage, production
COL. C, *Ag. Stat. 1952*, Table 72, and *1959*, Table 73, forage, production.
COL. D, Ratio, Col. C/Col. B.
COL. E, Preferred series, forage
1919-28. Col. B times 1929 ratio, Col. C/Col. B (.1675).
1929-57. Col. C, transcribed.

AO-9, NOTES

[p] Preliminary.

In *Ag. Stat. 1943* the sorghum grain series was revised for 1929-41, the adjustment in some years amounting to over 5%. Our series for 1919-28 is the old series, unrevised.

A small but growing output of sorghum for silage is omitted here. This product does not usually enter the market place, and no price quotations are given by the Department of Agriculture.

We have omitted data for 1915-18 (*Ag. Yearbook 1927*, p. 828—a series which was considerably revised, for 1919-27, in *Ag. Yearbook 1928*, p. 756).

AO-10. HAY: Output

(million tons)

	Ag. Stat., all hay production	Hist. Stat., tame hay production	S & B all hay production	All hay as percent of tame hay	All hay estimate (Col. B x Col. D)	Preferred series, all hay
	A	B	C	D	E	F
1869		24.5	27.32	111.5		
1870		21.3		111.8	23.81	23.8
1871		22.2		112.2	24.91	24.9
1872		23.9		112.5	26.89	26.9
1873		23.9		112.8	26.96	27.0
1874		24.5		113.2	27.73	27.7
1875		25.5		113.5	28.94	28.9
1876		28.8		113.8	32.77	32.8
1877		30.5		114.1	34.80	34.8
1878		33.3		114.5	38.13	38.1
1879		30.6	35.15	114.8	35.13	35.1
1880		32.5		116.6	37.90	37.9
1881		35.5		118.4	42.03	42.0
1882		39.5		120.2	47.48	47.5
1883		43.9		122.0	53.56	53.6
1884		43.1		123.8	53.36	53.4
1885		43.0		125.6	54.01	54.0
1886		44.9		127.4	57.20	57.2
1887		41.6		129.2	53.75	53.8
1888		47.2		131.0	61.83	61.8
1889		50.3	66.83	132.8	66.80	66.8
1890		50.5		132.7	67.01	67.0
1891		51.1		132.6	67.76	67.8
1892		52.7		132.5	69.83	69.8
1893		53.5		132.4	70.83	70.8
1894		47.8		132.2	63.19	63.2
1895		40.5		132.1	53.50	53.5
1896		50.6		132.0	66.79	66.8
1897		35.8		131.9	73.60	73.6
1898		60.4		131.8	79.61	79.6
1899		54.0	71.11	131.7	71.12	71.1
1900		49.8		131.2	65.34	65.3
1901		53.1		130.7	69.40	69.4
1902		59.1		130.2	76.95	77.0
1903		63.6		129.7	82.49	82.5
1904		65.6		129.2	84.76	84.8
1905		66.6		128.7	85.71	85.7
1906		60.4		128.2	77.43	77.4
1907		66.3		127.7	84.67	84.7
1908		71.6		127.2	91.08	91.1
1909	87.2	68.8	87.22	126.7	87.17	87.2
1910	75.2	62.9				75.2
1911	64.6	52.1				64.6
1912	86.1	69.1				86.1
1913	77.0	62.3				77.0
1914	82.6	65.8				82.6
1915	91.4	73.3				91.4
1916	98.6	81.2				98.6
1917	85.0	71.1				85.0
1918	82.3	68.5				82.3
1919	92.5	76.6				92.5
1920	91.7	76.2				91.7
1921	84.8	71.0				84.8
1922	95.2	80.8				95.2
1923	89.4	75.3				89.4
1924	91.5	78.9				91.5
1925	78.8	67.3				78.8
1926	76.0	67.1				76.0
1927	98.2	83.3				98.2
1928	83.8	72.2				83.8
1929	87.4	76.0				87.4
1930	74.5	63.7				74.5
1931	75.2	67.0				75.2
1932	83.7	71.8				83.7
1933	75.1	66.3				75.1
1934	60.5	55.7				60.5
1935	90.4	78.5				90.4
1936	70.0	62.7				70.0
1937	83.0	73.3				83.0
1938	91.4	80.4				91.4
1939	86.5					86.5
1940	96.1					96.1
1941	95.8					95.8
1942	107.7					107.7
1943	103.1					103.1
1944	102.9					102.9
1945	107.4					107.4
1946	99.5					99.5
1947	100.6					100.6
1948	96.2					96.2
1949	97.0					97.0
1950	103.8					103.8
1951	109.5					109.5
1952	106.4					106.4
1953	108.2					108.2
1954	107.8					107.8
1955	112.7					112.7
1956	108.7					108.7
1957	121.0					121.0

AO-10, SOURCES

Col. A, All hay
1909-48. *Ag. Stat. 1952*, Table 380.
1949-56. *Ag. Stat. 1957*, Table 388.
1957. *Stat. Abstract 1958*, p. 655.
Col. B, Tame hay. *Hist. Stat. 1949*, series E-214.
Col. C, All hay. Census estimates, from Strauss & Bean, fn. 25, p. 59, 1869, 1879, 1889, 1899, 1909.
Col. D, All hay (Col. C) as percent of tame hay. Derived for census years and interpolated for intercensal years; based on Strauss & Bean, *loc. cit.*
Col. E, All hay estimate. Col. B times Col. D.
Col. F, Preferred series
1870-1908. Col. E, transcribed.
1909-57. Col. A, transcribed.

AO-10, NOTES

No estimates for all hay production are given annually for years prior to 1909. Strauss & Bean, however, in a footnote give a table from a BAE publication which shows census estimates of all hay production. Figures for intercensal years have been interpolated on the basis of tame hay production.

AO-11. VEGETABLES: Output

	ARS, Index (1947-49 = 100)
	A
1910	56
1911	54
1912	61
1913	57
1914	60
1915	60
1916	56
1917	66
1918	65
1919	61
1920	68
1921	63
1922	73
1923	69
1924	72
1925	70
1926	71
1927	75
1928	78
1929	78
1930	79
1931	80
1932	80
1933	77
1934	84
1935	85
1936	80
1937	86
1938	86
1939	85
1940	88
1941	89
1942	95
1943	103
1944	98
1945	100
1946	111
1947	97
1948	103
1949	100
1950	102
1951	95
1952	96
1953	101
1954	98
1955	102
1956	109
1957	104

AO-12. POTATOES: Output

	(million bushels)
	A
1870	108
1871	135
1872	134
1873	129
1874	131
1875	180
1876	123
1877	174
1878	143
1879	169
1880	165
1881	128
1882	197
1883	227
1884	208
1885	197
1886	195
1887	160
1888	240
1889	218
1890	170
1891	264
1892	190
1893	204
1894	198
1895	302
1896	263
1897	198
1898	240
1899	273
1900	260
1901	207
1902	297
1903	276
1904	349
1905	301
1906	341
1907	333
1908	305
1909	390
1910	342
1911	303
1912	406
1913	332
1914	368
1915	337
1916	270
1917	399
1918	346
1919	297
1920	369
1921	325
1922	415
1923	366
1924	384
1925	296
1926	322
1927	370
1928	427
1929	333
1930	344
1931	384
1932	375
1933	343
1934	406
1935	379
1936	324
1937	376
1938	356
1939	342
1940	377
1941	356
1942	369
1943	459
1944	384
1945	419
1946	487
1947	389
1948	450
1949	402
1950	432
1951	326
1952	352
1953	386
1954	366
1955	378
1956	406
1957	399

AO-11 (Vegetables), SOURCES

COL. A, U. S. Department of Agriculture, Agricultural Research Service, *Changes in Farm Production and Efficiency* (Statistical Bulletin 233, revised Sept. 1959), Table 1. Vegetables included: Potatoes, sweet potatoes, dry edible beans, dry field peas, truck crops, and farm gardens.

AO-12 (Potatoes), SOURCES

COL. A

1870-1912. *Ag. Stat. 1952*, Table 339.
1919-56. *Ag. Stat. 1957*, Table 345.
1955-57. *Ag. Stat. 1958*, Table 342.

AO-12, NOTES

Data for 1919-57 have been converted from pounds to bushels by dividing by 60.

AO-13. TOMATOES: Output

AO-13, SOURCES

COL. A, *Ag. Stat. 1952*, Table 356, production for fresh market.

COL. B, *Ag. Stat. 1957*, Table 362, and *1959*, Table 370, production for fresh market.

COL. C, Ratio, Col. B/Col. A.

COL. D, Preferred series, fresh market

1918-38. Col. A times average of 1939-50 ratios in Col. C. (.558).

1939-56. Col. B, transcribed.

COL. E, *Ag. Stat. 1952*, Table 356, production for processing.

COL. F, *Ag. Stat. 1957*, Table 362, and *1959*, Table 370, production for processing.

COL. G, Ratio, Col. F/Col. E.

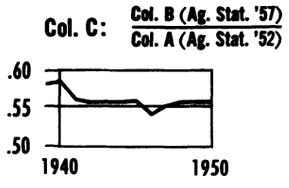
COL. H, Preferred series, processing

1918-38. Col. E, transcribed.

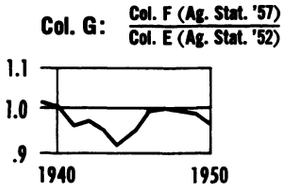
1939-57. Col. F, transcribed.

AO-13, NOTES

COL. C. The more recent data have been revised to include local market production from areas near consuming centers. Earlier data refer to production from important commercial shipping areas only. By increasing the early data to match the more inclusive estimates we partially diminish the upward bias that would result from straight transcription of the two series. However, since local market production probably decreased from 1918 to 1938, we are still overestimating the long-term rate of increase in output.



COL. G. The differences between the 1952 and 1957 *Agricultural Statistics* data on production for processing are not explained.



	Production for fresh market				Production for processing			
	(mil. bu.)	(mil. cwt.)	Col. B / Col. A	Preferred series (mil. cwt.)	(1000 tons)	(1000 tons)	Col. F / Col. E	Preferred series (1000 tons)
	A	B	C	D	E	F	G	H
1918	10.5			5.9	1566			1566
1919	10.7			6.0	1111			1111
1920	11.6			6.5	1100			1100
1921	10.2			5.7	457			457
1922	14.4			8.0	1199			1199
1923	13.7			7.6	1165			1165
1924	15.3			8.5	1190			1190
1925	16.9			9.4	1809			1809
1926	13.7			7.6	999			999
1927	16.7			9.3	1196			1196
1928	17.2			9.6	997			997
1929	20.3			11.3	1535			1535
1930	19.5			10.9	1758			1758
1931	18.9			10.5	976			976
1932	20.3			11.3	1199			1199
1933	19.3			10.8	1081			1081
1934	22.0			12.3	1426			1426
1935	22.5			12.6	1700			1700
1936	21.1			11.8	1988			1988
1937	22.0			12.3	1926			1926
1938	25.7			14.3	1743			1743
1939	26.3	15.2	.578	15.2	2000	2022	1.011	2022
1940	24.4	14.2	.582	14.2	2276	2283	1.003	2283
1941	24.5	13.7	.559	13.7	2802	2689	.960	2689
1942	27.8	15.4	.554	15.4	3167	3068	.969	3068
1943	27.8	15.4	.554	15.4	2661	2530	.951	2530
1944	28.3	15.7	.555	15.7	3170	2919	.921	2919
1945	32.7	18.2	.557	18.2	2689	2545	.946	2545
1946	34.2	18.5	.541	18.5	3394	3367	.992	3367
1947	29.4	16.2	.551	16.2	3243	3229	.996	3229
1948	29.8	16.5	.554	16.5	2914	2883	.989	2883
1949	31.9	17.7	.555	17.7	2519	2469	.980	2469
1950	32.0	17.7	.553	17.7	2734	2628	.961	2628
1951		18.4		18.4		4258		4258
1952		18.4		18.4		3546		3546
1953		18.2		18.2		3268		3268
1954		19.8		19.8		2700		2700
1955		20.9		20.9		3278		3278
1956		20.0		20.0		4638		4638
1957		19.7		20.1		3315		3315

AO-14. LETTUCE: Output

	Lettuce (mil. crates)	Lettuce (mil. cwt.)	Col. B / Col. A	Preferred series (mil. cwt.)
	A	B	C	D
1918	3.8			2.9
1919	4.3			3.3
1920	7.7			5.8
1921	7.2			5.5
1922	9.3			7.0
1923	10.4			7.9
1924	12.4			9.4
1925	14.4			10.9
1926	16.3			12.3
1927	18.6			14.1
1928	18.5			14.0
1929	20.0			15.1
1930	19.8			15.0
1931	19.3			14.6
1932	17.9			13.6
1933	17.4			13.2
1934	19.1			14.5
1935	19.3			14.6
1936	21.1			16.0
1937	20.7			15.7
1938	19.2			14.5
1939	23.4	17.1	.731	17.1
1940	22.1	15.6	.706	15.6
1941	23.0	16.6	.722	16.6
1942	23.4	17.3	.739	17.3
1943	24.5	18.9	.771	18.9
1944	28.6	21.6	.755	21.6
1945	29.4	22.5	.765	22.5
1946	33.9	26.1	.770	26.1
1947	34.2	26.7	.781	26.7
1948	34.4	26.5	.770	26.5
1949	33.8	26.7	.790	26.7
1950	37.0	28.9	.781	28.9
1951		27.9		27.9
1952		30.4		30.4
1953		30.8		30.8
1954		31.2		31.2
1955		32.1		32.1
1956		34.1		34.1
1957		33.1		33.1

AO-14, SOURCES

COL. A, *Ag. Stat. 1952*, Table 329, lettuce production.

COL. B

1939-55. *Ag. Stat. 1957*, Table 336.

1956-57. *Ag. Stat. 1959*, Table 345.

COL. C, Ratio, Col. B/Col. A.

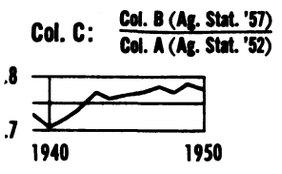
COL. D, Preferred series

1918-38. Col. A linked to Col. B by twelve year average of 1939-50 ratios (.757).

1939-57. Col. B, transcribed.

AO-14, NOTES

We have linked the old and the new series on the basis of the twelve year average ratio, despite a moderate trend as indicated in the chart.



AO-15. FRUITS AND NUTS: Output

	Strauss & Bean (1909-13 = 100)	USDA (1947-49 = 100)	Col. B / Col. A	Preferred series (1947-49 = 100)
	A	B	C	D
1870	27.0			16
1871	31.7			19
1872	43.8			26
1873	25.9			15
1874	46.2			27
1875	33.4			20
1876	62.6			37
1877	58.4			35
1878	70.6			42
1879	60.1			36
1880	89.8			53
1881	55.4			33
1882	74.8			45
1883	53.1			32
1884	73.5			44
1885	73.6			44
1886	67.3			40
1887	50.6			30
1888	82.4			49
1889	71.3			42
1890	45.8			27
1891	90.3			54
1892	61.8			37
1893	62.2			37
1894	56.6			34
1895	109.9			65
1896	89.8			53
1897	97.5			58
1898	82.6			49
1899	80.3			48
1900	119.3			71
1901	99.2			59
1902	116.4			69
1903	99.7			59
1904	118.0			70
1905	85.4			51
1906	120.3			72
1907	69.5			41
1908	95.8			57
1909	95.0			57
1910	92.6	53	.572	53
1911	106.7	65	.609	65
1912	118.0	69	.585	69
1913	89.2	53	.594	53
1914	127.6	77	.603	77
1915	123.8	72	.582	72
1916	105.1	65	.618	65
1917	92.1	56	.608	56
1918	100.7	61	.606	61
1919	109.9	63	.573	63
1920	137.2	73	.532	73
1921	82.0	48	.585	48
1922	143.7	79	.550	79
1923	137.9	79	.573	79
1924	128.0	73	.570	73
1925	128.6	68	.529	68
1926	169.7	89	.524	89
1927	118.2	68	.575	68
1928	162.8	81	.498	81
1929	122.2	76	.622	76
1930	153.6	75	.488	75
1931	168.3	94	.559	94
1932	137.2	76	.554	76
1933	135.5	77	.568	77
1934	140.0	72	.514	72
1935	161.0	91	.565	91
1936	137.9	72	.522	72
1937	194.6	95	.488	95
1938		85		85
1939		98		98
1940		95		95
1941		102		102
1942		100		100
1943		87		87
1944		102		102
1945		93		93
1946		110		110
1947		104		104
1948		96		96
1949		100		100
1950		104		104
1951		106		106
1952		102		102
1953		104		104
1954		104		104
1955		104		104
1956		110		110
1957		112		112

AO-15, SOURCES

Col. A, Strauss & Bean, Table 69, "ideal" index of orchard fruits, citrus fruits, and grapes, crop years.

Col. B, USDA, Agricultural Research Service, *Changes in Farm Production and Efficiency* (Statistical Bulletin 233, revised Sept. 1959), Table 1, index of fruits and nuts.

Col. C, Ratio, Col. B/Col. A.

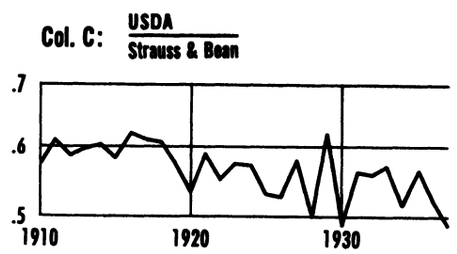
Col. D, Preferred series

1870-1909. Col. A times the average of the 1910-19 ratios in Col. C (0.5950).

1910-57. Col. B, transcribed.

AO-15, NOTES

The chart indicates that there may be a little downward bias in the early part of our preferred series, due to our use of the Col. C ratios for 1910-19. There appears to be a trend, which would require the use of higher ratios for earlier years.



AO-16. ORCHARD FRUITS: Output

	Orchard fruits (mil. bushels)	Apples	Peaches	Pears	Cherries	Plums, prunes, apricots	Sum, Cols. B-F	Col. G / Col. A	Preferred series (1000 tons)
		(1000 tons)							
	A	B	C	D	E	F	G	H	I
1870	70								1600
1871	82								1900
1872	112								2600
1873	67								1500
1874	119								2700
1875	86								2000
1876	162								3700
1877	151								3400
1878	183								4200
1879	156								3600
1880	231								5300
1881	143								3300
1882	194								4400
1883	138								3200
1884	190								4300
1885	190								4300
1886	173								4000
1887	131								3000
1888	214								4900
1889	184								4200
1890	111								2500
1891	241								5500
1892	154								3500
1893	156								3600
1894	141								3200
1895	308								7000
1896	266								6100
1897	264								6000
1898	220								5000
1899	212								4800
1900	336								7700
1901	268								6100
1902	312								7100
1903	251								5700
1904	308								7000
1905	211								4800
1906	315								7200
1907	144								3300
1908	218								5000
1909	216	2840							4900
1910	207	2740							4700
1911	245	4110							5600
1912	292	4400							6700
1913	190	2640							4300
1914	293	4560							6700
1915	285	3940							6500
1916	224	3540							5100
1917	209	3040							4800
1918	210	3160							4800
1919	218	2750	1261	368	40	665	5084	.0233	5084
1920	282	4042	1086	432	53	485	6098	.0216	6098
1921	146	1870	803	285	32	479	3469	.0238	3469
1922	281	3704	1400	506	66	671	6347	.0226	6347
1923	255	3538	1096	428	62	713	5837	.0229	5837
1924	241	3138	1260	463	79	639	5579	.0231	5579
1925	227	2981	1106	497	74	653	5311	.0234	5311
1926	321	4491	1614	604	108	813	7630	.0238	7630
1927	187	2263	1052	449	61	958	4783	.0256	4783
1928	277	3478	1599	603	94	894	6668	.0241	6668
1929	212	2642	1089	535	98	786	5150	.0243	5150
1930	248	3063	1353	668	122	1143	6349	.0256	6349
1931	315	4017	1868	623	126	1038	7672	.0244	7672
1932	213	2871	1059	603	145	934	5612	.0263	5612
1933	221	2906	1107	591	136	920	5660	.0256	5660
1934	204	2544	1166	693	138	820	5361	.0263	5361
1935	261	3370	1331	642	146	1134	6623	.0254	6623
1936	193	2353	1170	673	124	893	5213	.0270	5213
1937	306	3676	1441	721	148	1109	7095	.0232	7095
1938		2537	1294	781	144	1105	5861		5861
1939		3342	1541	721	184	1082	6870		6870
1940		2674	1388	730	173	744	5709		5709
1941		2933	1809	719	162	874	6497		6497
1942		3041	1601	746	197	846	6431		6431
1943		2095	1026	593	116	807	4637		4637
1944		2910	1874	766	196	955	6701		6701
1945		1600	1902	799	148	976	5425		5425
1946		2854	1988	823	228	1133	7026		7026
1947		2709	1834	837	171	874	6425		6425
1948		2144	1455	614	213	862	5288		5288
1949		3216	1648	807	245	831	6747		6747
1950		2987	1199	702	237	717	5842		5842
1951		2673	1517	707	229	824	5950		5950
1952		2266	1498	723	218	662	5367		5367
1953		2289	1546	684	223	790	5532		5532
1954		2682	1490	722	204	755	5853		5853
1955		2572	1244	726	263	799	5604		5604
1956		2420	1682	790	168	885	5945		5945
1957		2845	1476	774	240	763	6098		6098

AO-16, SOURCES

COL. A, Strauss & Bean, Table 34, orchard fruits, production, "actual."

COL. B, *Ag. Stat. 1952*, Table 220; *1957*, Table 217; and *1959*, Table 227

1909-33. "Apples, all" times average of 1934-38 ratios of "commercial" to "all" (ratio, 0.8148).

1934-57. "Apples, commercial crop," transcribed.

COL. C, *Ibid.*, "Peaches."

COL. D, *Ibid.*, "Pears."

COL. E, *Ibid.*, "Cherries."

COL. F, *Ibid.*, "Plums" plus "Prunes" plus "Apricots."

COL. G, Sum, Cols. B through F.

COL. H, Ratio, Col. G/Col. A.

COL. I, Preferred series

1870-1918. Col. A times average of 1919-1923 ratios in Col. H (.02284).

1919-57. Col. G, transcribed.

AO-16, NOTES

COL. A. In the absence of production data prior to 1889, Strauss and Bean estimated production by the following method: From data on price and value (Census) they derived production estimates for census years. From annual estimates of yield (actual output as percent of full crop) they were able to determine estimates of "full crops" for census years. These provided a basis for straight line interpolation to obtain estimates of full crops for intercensal years. The annual estimates of full crops were then multiplied by yield estimates to obtain "actual" production.

COL. B. Since 1938, official estimates of apple production have been restricted by law to the commercial crop. Prior to 1934, the data were reported for "all" apples only. To obtain consistent data, we have estimated commercial crop apple production prior to 1934, on the basis of ratios of commercial crop to total crop for 1934-38. It is believed that noncommercial apple production in recent years has been considerably less than it was formerly. Consequently, our use of the commercial only, since 1938, gives some upward bias to the series.

COL. G. The prices of the components are not sufficiently different to warrant computing a price-weighted index.

COL. I. The difference in trend between Strauss & Bean and our total lies partially in Strauss & Bean's use of "all" apples as against our estimate of commercial only. In the period 1919-37, apple production did not change, while that of the other fruits rose rapidly. Use of commercial apples only decreases the weight of apples and thus gives an upward bias to our total. Part of the remaining difference in trend is due to Strauss & Bean's use of a fixed percentage for cherries, plums, and prunes for 1919-23 (cf. Strauss & Bean, p. 78).

AO-17. APPLES: Output

(million bushels)

	Total crop		Col. B / Col. A	Commercial crop	Col. D / Col. B	Preferred series
	Old series	Revised series				
	A	B	C	D	E	F
1870						(42)
1871						(49)
1872						(67)
1873						(40)
1874						(71)
1875						(51)
1876						(97)
1877						(90)
1878						(109)
1879						(93)
1880						(138)
1881						(85)
1882						(116)
1883						(82)
1884						(113)
1885						(113)
1886						(103)
1887						(78)
1888						(128)
1889	143.1					113
1890	80.1					63
1891	198.9					157
1892	120.5					95
1893	114.8					91
1894	134.6					106
1895	219.6					173
1896	232.6					184
1897	163.7					129
1898	118.1					93
1899	175.4					138
1900	205.9					163
1901	135.5					107
1902	212.3					168
1903	195.7					154
1904	233.6					184
1905	136.2					108
1906	216.7					171
1907	119.6					94
1908	148.9					118
1909	145.4	145.4	1.000			118
1910	141.6	140.0	.989			114
1911	214.0	210.4	.983			171
1912	235.2	225.0	.957			182
1913	145.4	135.1	.929			110
1914	253.2	233.4	.922			190
1915	230.0	201.7	.877			164
1916	193.9	181.2	.934			147
1917	166.7	155.4	.932			126
1918	169.6	161.5	.952			131
1919	142.1	140.6	.989			114
1920	223.7	206.7	.924			168
1921	99.0	95.6	.966			78
1922	202.7	189.4	.934			154
1923	202.8	180.9	.892			147
1924	171.7	160.2	.933			130
1925	172.4	152.4	.884			124
1926	246.6	222.3	.901			181
1927	123.7	115.7	.935			94
1928	186.9	177.8	.951			144
1929	142.8	135.1	.946			110
1930		156.6				127
1931		203.3				165
1932		142.6				116
1933		144.0				117
1934		126.9		104.8	.826	105
1935		164.8		131.8	.800	132
1936		115.9		97.3	.840	97
1937		185.9		141.0	.758	141
1938		121.2		101.8	.840	102
1939				124.7		125
1940				106.8		107
1941				119.6		120
1942				118.4		118
1943				87.3		87
1944				119.2		119
1945				66.7		67
1946				118.4		118
1947				108.4		108
1948				88.5		88
1949				122.1		122
1950				120.6		121
1951				101.6		102
1952				94.4		94
1953				95.4		95
1954				111.5		111
1955				104.3		104
1956				100.9		101
1957				116.8		117

AO-17, SOURCES

COL. A, Old series, total crop. *Ag. Yearbook 1931*, p. 713, production, total.

COL. B, Revised series, total crop. *Ag. Stat. 1952*, p. 188, apples, total crop, production having value.

COL. C, Ratio, Col. B/Col. A.

COL. D, Series for commercial crop only. *Ag. Stat. 1957*, p. 189, and *Ag. Stat. 1959*, p. 158, apples, commercial crop, production having value.

COL. E, Ratio, Col. D/Col. B.

COL. F, Preferred series, commercial apple output

1870-88. Table AO-16, Col. A, times 1889 average ratio of outputs, apples/orchard fruits (.60).

1889-1908. Col. A times 1909-13 average ratio in Col. C (.9716), times average 1934-38 ratio in Col. E (.8128). (Combined ratio, .7897.)

1909-33. Col. B times 1934-38 average ratio in Col. E (.8128).

1934-57. Col. D, transcribed.

AO-17, NOTES

( ) Extrapolated (see sources, above).

The three series are obviously not entirely consistent with each other, and the linking of the three as in Col. F does not provide a best estimate of the apple crop sold each year. An older commercial crop series, to be found in *Ag. Yearbook 1931*, differs considerably from the figures given in Col. F for commercial output. This is, however, the most nearly consistent series which can be created out of the three differing series available. We have linked or "deflated" each series to the level of the latest series, thus obtaining total production of apples in the commercial apple areas of the 35 principal apple growing states.

See also Notes to Col. B. of Table AO-16.

AO-18. CITRUS FRUITS: Output

	Strauss & Bean, total shipments (million boxes)	Ag. Stat., production (1000 tons)	Col. B / Col. A	Preferred series (1000 tons)
	A	B	C	D
1886	2.09			80
1887	2.39			92
1888	3.38			130
1889	3.46			133
1890	3.97			153
1891	4.32			166
1892	5.58			215
1893	6.37			245
1894	4.69			180
1895	2.95			113
1896	2.97			114
1897	6.03			232
1898	5.12			197
1899	7.63			293
1900	10.36			398
1901	8.60			331
1902	10.34			398
1903	12.97			499
1904	14.19			546
1905	13.26			510
1906	14.06			541
1907	16.75			645
1908	20.43			787
1909	18.50			712
1910	21.95			845
1911	19.96			768
1912	14.99			577
1913	26.04			1001
1914	27.16			1046
1915	25.23			971
1916	28.04			1078
1917	14.35			552
1918	26.90			1036
1919	35.23	1370	38.9	1370
1920	44.42	1724	38.8	1724
1921	33.87	1326	39.1	1326
1922	44.64	1724	38.6	1724
1923	54.39	2083	38.3	2083
1924	45.57	1748	38.4	1748
1925	50.53	1934	38.3	1934
1926	56.92	2144	37.7	2144
1927	47.70	1799	37.7	1799
1928	75.93	2945	38.8	2945
1929	49.88	1886	37.8	1886
1930	82.28	3158	38.4	3158
1931	73.05	2778	38.0	2778
1932	73.25	2815	38.4	2815
1933	68.04	2676	39.3	2676
1934	94.71	3656	38.6	3656
1935	77.53	3002	38.7	3002
1936	91.81	3641	39.7	3641
1937	113.48	4435	39.1	4435
1938		5239		5239
1939		4776		4776
1940		5662		5662
1941		5521		5521
1942		6302		6302
1943		7090		7090
1944		7233		7233
1945		7466		7466
1946		7861		7861
1947		7792		7792
1948		6636		6636
1949		6480		6480
1950		7537		7537
1951		7368		7368
1952		7329		7329
1953		8220		8220
1954		8066		8066
1955		8217		8217
1956		8325		8325
1957		7071		7071

AO-18, SOURCES

COL. A, Strauss & Bean, Table 36, total shipments, crop years, million boxes.

COL. B

1919-55. *Ag. Stat. 1957*, Table 217, sum of production of oranges, tangerines, grapefruit, lemons, limes.

1956-57. *Ag. Stat. 1958*, Table 216.

COL. C, Ratio, Col. B/Col. A.

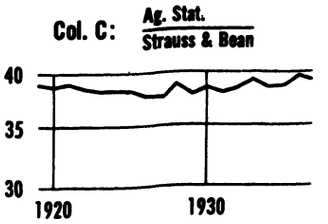
COL. D, Preferred series

1886-1918. Col. A times the average of the 1919-28 ratios found in Col. C (0.3846).

1919-57. Col. B, transcribed.

AO-18, NOTES

The ratio of Col. C is so nearly constant as to indicate that Strauss & Bean's series had the same basis as that of the Department of Agriculture.



AO-19. ORANGES: Output (Including Tangerines)

(million boxes)

	Ag. Stat. production having value	Ag. Yearbook, sum	Barger & Landsberg, sum	Strauss & Bean citrus fruit	Col. F / Col. D	Preferred series
	A	B	C	D	E	F
1886				2.1		2
1887				2.4		2
1888				3.4		3
1889				3.5		3
1890				4.0		4
1891				4.3		4
1892				5.6		5
1893				6.4		6
1894				4.7		5
1895				3.0		3
1896				3.0		3
1897				6.0		6
1898				5.1		5
1899		6.2		7.6		7
1900				10.4		10
1901				8.6		8
1902				10.3		10
1903				13.0		12
1904				14.2		14
1905			13.3	13.3	1.00	13.3
1906			14.8	14.1	1.05	14.8
1907			14.8	16.8	.88	14.8
1908			19.0	20.4	.93	19.0
1909		19.5	17.6	18.5	.95	17.6
1910			20.8	22.0	.95	20.8
1911			19.4	20.0	.97	19.4
1912			13.2	15.0	.88	13.2
1913			26.4	26.0	1.02	26.4
1914			24.2	27.2	.89	24.2
1915			23.0	25.2	.91	23.0
1916			26.8	28.0	.96	26.8
1917			11.6	14.4	.81	11.6
1918			24.1	26.9	.90	24.1
1919	24.8	22.8	24.6	35.2	.70	24.8
1920	33.4	30.0	32.0	44.4	.75	33.4
1921	22.7	20.6	22.3	33.9	.67	22.7
1922	32.6	30.7	32.2	44.6	.73	32.6
1923	38.3	37.5	38.0	54.4	.70	38.3
1924	30.0	29.8	30.3	45.6	.66	30.0
1925	34.8	33.6	34.6	50.5	.69	34.8
1926	39.6	39.2	40.1	56.9	.70	39.6
1927	32.7	31.6	32.7	47.7	.69	32.7
1928	56.2	54.2	55.1	75.9	.74	56.2
1929	31.8	33.8	32.6	49.9	.64	31.8
1930	55.1		55.4			55.1
1931	49.9		50.2			49.9
1932	51.6		51.4			51.6
1933	46.2		46.4			46.2
1934	62.6		62.6			62.6
1935	51.5		51.5			51.5
1936	53.5		53.9			53.5
1937	73.1		73.6			73.1
1938	75.6		76.2			75.6
1939	74.5		74.6			74.5
1940	84.2					84.2
1941	84.4					84.4
1942	88.7					88.7
1943	105.8					105.8
1944	111.4					111.4
1945	103.6					103.6
1946	115.9					115.9
1947	112.9					112.9
1948	103.2					103.2
1949	107.6					107.6
1950	120.9					120.9
1951	121.5					121.5
1952	124.6					124.6
1953	129.9					129.9
1954	134.9					134.9
1955	136.2					136.2
1956	136.0					136.0
1957	110.9					110.9

AO-19, SOURCES

COL. A, *Ag. Stat. 1952*, Table 242, and *1959*, Table 248, production having value—oranges (including tangerines), million boxes.

COL. B, *Ag. Yearbook 1931*, p. 725, sum of California, Florida, Texas, Arizona, Alabama, Louisiana, and Mississippi output.

COL. C, Barger & Landsberg, pp. 340-41, sum of oranges in California, Florida, and "other."

COL. D, Strauss & Bean, Table 36, citrus fruits, shipments.

COL. E, Ratio, Col. F/Col. D.

COL. F, Preferred series

1886-1904. Col. D times average 1905-09 ratio in Col. E (0.96).

1905-18. Col. C, transcribed.

1919-57. Col. A, transcribed.

AO-20. SUGAR: Output

(thousand tons)

	Strauss & Bean, cane sugar	Strauss & Bean, beet sugar	Ag. Stat., cane sugar	Ag. Stat., beet sugar	Preferred series, production
	A	B	C	D	E
1870	89				89
1871	78				78
1872	67				67
1873	54				54
1874	71				71
1875	86				86
1876	100				100
1877	80				80
1878	125				125
1879	89				89
1880	143				143
1881	86				86
1882	159				159
1883	151	.64			152
1884	113	1.15			114
1885	151	.72			152
1886	96	.96			97
1887	188	.31			188
1888	172	2.24			174
1889	151	2.65			154
1890	249	4.16			253
1891	185	6.45			191
1892	249	14.5			264
1893	305	24.0			329
1894	365	24.2			389
1895	272	35.2			307
1896	322	45.2			367
1897	354	48.6			403
1898	284	39.1			323
1899	161	87.9			249
1900	312	92.5			404
1901	364	198.5			562
1902	373	235			608
1903	278	259			537
1904	415	260			675
1905	391	336			727
1906	272	520			792
1907	394	498			892
1908	414	458			872
1909	332	551			883
1910	355	548			903
1911	361	644			1005
1912	163	744			907
1913	301	788			1089
1914	247	776			1023
1915	139	940			1079
1916	311	882			1193
1917	246	823			1069
1918	284	818			1102
1919	125	777			902
1920	180	1165			1345
1921	334	1091			1425
1922	302	722			1024
1923	168	943			1111
1924	90	1166			1256
1925	142	977			1119
1926	48	960			1008
1927	72	1170			1242
1928	136	1135			1271
1929	218	1089	218	1089	1307
1930	215	1293	215	1293	1508
1931	184	1237	184	1237	1421
1932	265	1452	265	1452	1717
1933	250	1757	250	1757	2007
1934	267	1241	262	1241	1503
1935	383	1268	382	1268	1650
1936	437	1395	438	1395	1833
1937	510	1376	459	1373	1832
1938			584	1793	2377
1939			506	1756	2262
1940			332	1881	2213
1941			416	1592	2008
1942			458	1730	2188
1943			497	1000	1497
1944			437	1048	1485
1945			470	1274	1744
1946			425	1522	1947
1947			377	1839	2216
1948			473	1370	1843
1949			519	1563	2082
1950			560	2009	2569
1951			417	1549	1966
1952			605	1505	2110
1953			630	1816	2446
1954			610	2043	2653
1955			572	1739	2311
1956			557	1966	2523
1957			532	2188	2720

AO-20, SOURCES

COL. A, Strauss & Bean, Table 31, raw sugar from sugarcane.
COL. B, Strauss & Bean, Table 30, raw sugar from sugar beets.
COL. C, *Ag. Stat. 1952*, Table 123, and *Ag. Stat. 1959*, Table 123, raw sugar from sugar cane, continental U.S.
COL. D, *Ag. Stat. 1952*, Table 123, and *Ag. Stat. 1959*, Table 123, raw sugar from beet sugar, continental U.S.
COL. E, Preferred series
1870-1928. Sum of Cols. A and B.
1929-57. Sum of Cols. C and D.

AO-21. TOBACCO: Output

(million pounds)

	Census, tobacco, production	Preferred series, tobacco, production
	A	B
1870		345
1871		326
1872		385
1873		382
1874		217
1875		609
1876		466
1877		621
1878		455
1879	473	472
1880		469
1881		426
1882		579
1883		509
1884		580
1885		610
1886		608
1887		469
1888		661
1889	488	525
1890		648
1891		746
1892		757
1893		767
1894		767
1895		745
1896		760
1897		703
1898		909
1899	868	870
1900		852
1901		886
1902		960
1903		976
1904		857
1905		939
1906		972
1907		886
1908		836
1909	1056	1054
1910		1142
1911		941
1912		1117
1913		992
1914		1037
1915		1157
1916		1207
1917		1326
1918		1444
1919	1372	1444
1920		1509
1921		1005
1922		1254
1923		1518
1924	1106	1245
1925		1376
1926		1289
1927		1211
1928		1373
1929	1457	1533
1930		1648
1931		1565
1932		1018
1933		1372
1934	1021	1085
1935		1302
1936		1163
1937		1569
1938		1386
1939	1700	1880
1940		1460
1941		1262
1942		1408
1943		1406
1944	1779	1951
1945		1991
1946		2315
1947		2107
1948		1980
1949	1770	1969
1950		2030
1951		2332
1952		2256
1953		2059
1954	1921	2244
1955		2193
1956		2176
1957		1668

AO-21, SOURCES

COL. A, Census, as given in *Ag. Stat.*
COL. B, Preferred series
1870-1949. *Ag. Stat. 1952,* Table 149, p. 126.
1950-54. *Ag. Stat. 1956,* Table 139, p. 95.
1955-57. AMS, *Tobacco Statistics 1958,* p. 16.

AO-21, NOTES

The data are for crop years beginning October 1 (except for flue cured and cigar wrapper, for which crop year begins July 1). They are on a farm sales weight equivalent basis.

AO-22. COTTON: Output

	USDA estimates (million 500-lb. bales)
	A
1870	4.03
1871	2.76
1872	3.65
1873	3.87
1874	3.53
1875	4.30
1876	4.12
1877	4.49
1878	4.75
1879	5.47
1880	6.36
1881	5.14
1882	6.83
1883	5.52
1884	5.47
1885	6.37
1886	6.32
1887	6.89
1888	6.92
1889	7.47
1890	8.56
1891	8.94
1892	6.66
1893	7.43
1894	10.03
1895	7.15
1896	8.52
1897	10.99
1898	11.53
1899	9.35
1900	10.12
1901	9.51
1902	10.63
1903	9.85
1904	13.44
1905	10.58
1906	13.27
1907	11.11
1908	13.24
1909	10.00
1910	11.61
1911	15.69
1912	13.70
1913	14.16
1914	16.14
1915	11.19
1916	11.45
1917	11.30
1918	12.04
1919	11.42
1920	13.43
1921	7.94
1922	9.76
1923	10.14
1924	13.63
1925	16.10
1926	17.98
1927	12.96
1928	14.48
1929	14.82
1930	13.93
1931	17.10
1932	13.00
1933	13.05
1934	9.64
1935	10.64
1936	12.40
1937	18.95
1938	11.94
1939	11.82
1940	12.57
1941	10.74
1942	12.82
1943	11.43
1944	12.23
1945	9.02
1946	8.64
1947	11.86
1948	14.88
1949	16.13
1950	10.01
1951	15.15
1952	15.14
1953	16.46
1954	13.70
1955	14.72
1956	13.31
1957	10.96

AO-22, SOURCES

COL. A

1870-98. "Cotton Crop of the United States, 1790-1911," U. S. Department of Agriculture Circular 32.

1899-1952. "Cotton and Cottonseed," USDA Statistical Bulletin 164 (June 1955).

1953-1957. "Statistics on Cotton and Related Data," USDA Statistical Bulletin 99, Feb. 1957, and Supplement, Oct. 1958.

AO-22, NOTES

The data represent equivalent 500 lb. (gross weight) bales.

AO-23. COTTONSEED: Output

(million tons)

	Strauss & Bean, production, crop year	Stat. Ab. & Ag. Stat., cottonseed used	Ag. Stat. 1957 & 1959, production	Col. B / Col. A	Preferred series
	A	B	C	D	E
1870			1.79		
1871			1.22		
1872			1.62		
1873			1.72		
1874	.084		1.57		.084
1875	.123		1.91		.123
1876	.098		1.83		.098
1877	.150		1.99		.150
1878	.181		2.11		.181
1879	.235		2.42		.235
1880	.182		2.82		.182
1881	.295		2.28		.295
1882	.392		3.03		.392
1883	.396		2.45		.396
1884	.499		2.43		.499
1885	.578	.578	2.83	1.000	.578
1886	.694	.694	2.80	1.000	.694
1887	.823	.823	3.06	1.000	.823
1888	.794	.794	3.07	1.000	.794
1889	.874	.874	3.32	1.000	.874
1890	1.02	1.02	3.80	1.000	1.02
1891	1.07	1.07	3.97	1.000	1.07
1892	1.05	1.05	2.96	1.000	1.05
1893	1.43	1.43	3.30	1.000	1.43
1894	1.68	1.68	4.45	1.000	1.68
1895	1.44	1.44	3.17	1.000	1.44
1896	1.63	1.63	3.78	1.000	1.63
1897	2.10	2.10	4.88	1.000	2.10
1898	2.35	2.35	5.12	1.000	2.35
1899	2.48	2.48	4.15	1.000	2.48
1900	2.42	2.42	4.50	1.000	2.42
1901	3.15	3.15	4.23	1.000	3.15
1902	3.27	3.27	4.73	1.000	3.27
1903	3.24	3.24	4.38	1.000	3.24
1904	3.34	3.34	5.97	1.000	3.34
1905	3.13	3.13	4.70	1.000	3.13
1906	3.84	3.84	5.90	1.000	3.84
1907	2.56	2.56	4.93	1.000	2.56
1908	3.67	3.67	5.88	1.000	3.67
1909	3.27	3.27	4.44	1.000	3.27
1910	4.11	4.11	5.16	1.000	4.11
1911	4.92	4.92	6.97	1.000	4.92
1912	4.58	4.58	6.09	1.000	4.58
1913	4.85	4.85	6.29	1.000	4.85
1914	5.78	5.77	7.16	.998	5.77
1915	4.20	4.19	4.96	.998	4.19
1916	4.48	4.50	5.08	1.004	4.50
1917	4.25	4.26	5.01	1.002	4.26
1918	4.48	4.46	5.34	.996	4.46
1919	4.01	3.99	5.07	.995	3.99
1920	4.07	4.10	5.97	1.007	4.10
1921	3.01	2.90	3.53	.963	2.90
1922	3.24	3.22	4.33	.994	3.22
1923	3.31	3.28	4.50	.991	3.28
1924	4.61	4.59	6.05	.996	4.59
1925	5.56	5.52	7.15	.993	5.52
1926	6.31	6.36	7.99	1.008	6.36
1927	4.65	4.59	5.76	.987	4.59
1928	5.06	5.08	6.32	1.004	5.08
1929	5.02	5.02	6.41	1.000	5.02
1930	4.72	4.70	6.03	.996	4.70
1931	5.33	5.62	7.31	1.054	5.62
1932	4.62	4.54	5.82	.983	4.54
1933	4.16	4.16	5.51	1.000	4.16
1934	3.55	3.42	4.26	.963	3.42
1935	3.82	3.75	4.63	.982	3.75
1936	4.50	4.52	5.47	1.004	4.52
1937	6.33	6.62	7.84	1.046	6.62
1938		4.26	4.95		4.26
1939		4.07	4.87		4.07
1940		4.49	5.29		4.49
1941		3.96	4.55		3.96
1942		4.52	5.20		4.52
1943		3.98	4.69		3.98
1944		4.36	4.90		4.36
1945		3.16	3.66		3.16
1946		3.07	3.51		3.07
1947		4.07	4.68		4.07
1948		5.38	5.94		5.38
1949		5.87	6.56		5.87
1950		3.50	4.10		3.50
1951		5.55	6.29		5.55
1952		5.58	6.19		5.58
1953		6.33	6.75		6.33
1954		5.23	5.71		5.23
1955		5.56	6.04		5.56
1956		4.98	5.41		4.98
1957		4.27	4.61		4.27

AO-23 (Cottonseed), SOURCES

Col. A, Strauss & Bean, Table 26, production, crop year.

Col. B, Cottonseed used

1885-1909. *Stat. Abstract 1911*, p. 231, cottonseed manufactured.

1910-57. *Ag. Stat. 1952*, p. 142, delivered to oil mills, and *1959*, p. 119, total sales to oil mills.

Col. C, *Ag. Stat. 1952*, pp. 75-76, and *1959*, p. 60, production.

Col. D, Ratio, Col. B/Col. A.

Col. E

1874-84. Col. A, transcribed.

1885-1957. Col. B, transcribed.

AO-23, NOTES

Prior to 1928, "production" was calculated as 65/35 of cotton (lint) output. Our preferred series covers only seed delivered to mills, because in the 1870's most cottonseed was waste, and not a significant economic product; analogous to fruit not harvested.

AO-24 (Soybeans), SOURCES

Col. A, *Ag. Stat. 1957*, Table 185, and *1959*, Table 195, soybeans for beans, production.

AO-25 (Peanuts), SOURCES

Col. A, Strauss & Bean, Table 38, production, peanuts, calendar years.

Col. B

1909-18. *Ag. Stat. 1952*, Table 178, production.

1919-43. *Ag. Stat. 1957*, Table 174, production.

1944-57. *Ag. Stat. 1959*, Table 183, production.

Col. C, Ratio, Col. B/Col. A.

Col. D, Preferred series

1870-1908. Col. A times the average of ratios for 1909-13 in Col. C (.6884).

1909-57. Col. B, transcribed.

AO-25, NOTES

The Bureau of Agricultural Economics made several revisions in their output (and price) series around 1940, when Strauss and Bean published. However, none of them is the same as Strauss and Bean's series for 1909-37.

Peanuts "hogged off" or otherwise used without harvesting are not included here.

AO-26 (Flaxseed), SOURCES

Col. A, Strauss & Bean, Table 23, production, crop year; *Ag. Stat. 1957*, Table 165, and *1959*, Table 173, production.

AO-26, NOTES

The Strauss & Bean series is identical to the *Agricultural Statistics* series for years of overlap.

AO-24. SOYBEANS: Output

	Ag. Stat., soybeans, output (mil. bu.)
	A
1924	5.0
1925	4.9
1926	5.2
1927	6.9
1928	7.9
1929	9.4
1930	13.9
1931	17.3
1932	15.2
1933	13.5
1934	23.2
1935	48.9
1936	33.7
1937	46.2
1938	61.9
1939	90.1
1940	78.0
1941	107
1942	188
1943	190
1944	192
1945	193
1946	203
1947	186
1948	227
1949	234
1950	299
1951	284
1952	299
1953	269
1954	341
1955	374
1956	449
1957	484

AO-25. PEANUTS: Output

(million pounds)

	Strauss & Bean, production	Ag. Stat., production	Col. B / Col. A	Preferred series production
	A	B	C	D
1870	16.0			11.0
1871	17.6			12.1
1872	19.3			13.3
1873	21.0			14.5
1874	22.9			15.8
1875	25.0			17.2
1876	27.2			18.7
1877	29.7			20.4
1878	32.4			22.3
1879	35.5			24.4
1880	38.7			26.6
1881	42.3			29.1
1882	46.1			31.7
1883	50.3			34.6
1884	54.7			37.7
1885	59.5			41.0
1886	64.8			44.6
1887	70.7			48.7
1888	77.3			53.2
1889	84.6			58.2
1890	94.0			64.7
1891	106			73.0
1892	119			81.9
1893	135			92.9
1894	152			105
1895	172			118
1896	194			134
1897	220			151
1898	248			171
1899	280			193
1900	300			207
1901	317			218
1902	334			230
1903	353			243
1904	374			257
1905	396			273
1906	418			288
1907	443			305
1908	470			324
1909	499	355	.711	355
1910	519	384	.740	384
1911	537	366	.682	366
1912	558	362	.649	362
1913	580	383	.660	383
1914	604	421	.697	421
1915	630	481	.763	481
1916	517	666	1.288	666
1917	798	989	1.239	989
1918	767	946	1.233	946
1919	512	688	1.344	688
1920	497	696	1.400	696
1921	472	678	1.436	678
1922	378	523	1.384	523
1923	359	568	1.582	568
1924	438	713	1.628	713
1925	485	722	1.489	722
1926	563	662	1.176	662
1927	530	844	1.592	844
1928	534	844	1.580	844
1929	588	898	1.527	898
1930	425	697	1.640	697
1931	576	1056	1.833	1056
1932	637	941	1.477	941
1933	580	820	1.414	820
1934	710	1014	1.428	1014
1935	824	1153	1.399	1153
1936	846	1260	1.489	1260
1937	829	1233	1.487	1233
1938		1289		1289
1939		1213		1213
1940		1767		1767
1941		1475		1475
1942		2193		2193
1943		2176		2176
1944		2081		2081
1945		2042		2042
1946		2038		2038
1947		2182		2182
1948		2336		2336
1949		1865		1865
1950		2035		2035
1951		1659		1659
1952		1356		1356
1953		1574		1574
1954		1008		1008
1955		1548		1548
1956		1608		1608
1957		1436		1436

AO-26. FLAXSEED: Output

	Million bushels
	A
1870	2.27
1871	2.82
1872	3.36
1873	3.91
1874	4.45
1875	4.99
1876	5.54
1877	6.08
1878	6.68
1879	7.17
1880	7.48
1881	7.79
1882	8.09
1883	8.40
1884	8.71
1885	9.02
1886	9.33
1887	9.63
1888	9.94
1889	10.61
1890	19.18
1891	16.73
1892	11.81
1893	10.42
1894	10.49
1895	21.41
1896	17.74
1897	13.24
1898	18.52
1899	19.97
1900	16.02
1901	27.60
1902	36.08
1903	25.36
1904	22.62
1905	28.69
1906	27.64
1907	23.79
1908	20.63
1909	19.51
1910	11.38
1911	18.54
1912	28.14
1913	15.10
1914	12.94
1915	11.27
1916	11.83
1917	8.40
1918	12.78
1919	6.77
1920	10.90
1921	8.11
1922	10.52
1923	16.56
1924	31.22
1925	22.33
1926	18.53
1927	25.17
1928	19.12
1929	15.92
1930	21.67
1931	11.76
1932	11.51
1933	6.90
1934	5.72
1935	14.91
1936	5.33
1937	7.07
1938	8.03
1939	19.61
1940	30.92
1941	32.13
1942	40.98
1943	50.01
1944	21.67
1945	34.56
1946	22.59
1947	40.62
1948	54.80
1949	42.98
1950	40.24
1951	34.70
1952	30.18
1953	37.66
1954	41.27
1955	41.24
1956	48.01
1957	25.92

AO-27. LIVESTOCK: Output

(billion dollars)

	Hogs	Cattle & calves	Chickens	Eggs	Turkeys	Sheep & lambs	Milk & products	Wool	All livestock and products, total output		
									1902 Weights	1929 Weights	1954 Weights
	A	B	C	D	E	F	G	H	I	J	K
1869			0.13	0.12							
1870	2.07	0.90	(.14)	(.13)		0.05	0.74	0.08	1.17	2.26	4.13
1871	2.27	0.92	(.14)	(.14)		0.05	0.79	0.08	1.25	2.41	4.42
1872	2.40	0.92	(.15)	(.15)		0.05	0.85	0.08	1.30	2.52	4.63
1873	2.18	0.98	(.15)	(.16)		0.06	0.89	0.08	1.27	2.50	4.53
1874	1.99	0.96	(.16)	(.17)		0.06	0.95	0.09	1.23	2.46	4.41
1875	1.99	1.01	(.16)	(.18)		0.06	1.00	0.09	1.27	2.54	4.52
1876	2.05	1.09	(.17)	(.19)		0.06	1.06	0.10	1.33	2.67	4.75
1877	2.35	1.24	(.17)	(.20)		0.07	1.12	0.10	1.48	2.94	5.28
1878	2.40	1.30	(.18)	(.21)		0.07	1.16	0.11	1.53	3.06	5.46
1879	2.35	1.35	0.18	0.22		0.07	1.22	0.11	1.55	3.12	5.53
1880	2.29	1.33	(.19)	(.24)		0.08	1.26	0.12	1.55	3.13	5.54
1881	2.27	1.36	(.19)	(.25)		0.08	1.31	0.12	1.58	3.20	5.61
1882	2.29	1.44	(.20)	(.27)		0.08	1.22	0.14	1.60	3.24	5.67
1883	2.35	1.60	(.21)	(.29)		0.09	1.40	0.15	1.72	3.51	6.13
1884	2.51	1.70	(.22)	(.31)		0.09	1.45	0.15	1.81	3.65	6.47
1885	2.46	1.75	(.22)	(.32)		0.09	1.49	0.16	1.83	3.75	6.53
1886	2.22	1.73	(.23)	(.34)		0.10	1.54	0.15	1.78	3.69	6.35
1887	2.12	1.82	(.24)	(.36)		0.10	1.59	0.14	1.79	3.76	6.41
1888	2.29	1.71	(.24)	(.37)		0.11	1.65	0.14	1.84	3.83	6.55
1889	2.44	1.80	0.25	0.39		0.11	1.70	0.13	1.93	4.00	6.86
1890	2.42	1.74	(.26)	(.41)		0.11	1.76	0.14	1.96	4.02	6.88
1891	3.61	1.51	(.27)	(.43)		0.12	1.65	0.14	2.21	4.36	7.78
1892	2.12	1.31	(.28)	(.46)		0.12	1.61	0.15	1.74	3.59	6.09
1893	2.33	1.17	(.29)	(.48)		0.13	1.56	0.18	1.78	3.62	6.18
1894	2.53	1.27	(.30)	(.50)		0.14	1.59	0.16	1.88	3.81	6.53
1895	2.40	1.42	(.30)	(.52)		0.15	1.88	0.15	1.96	4.05	6.86
1896	2.59	1.64	(.31)	(.54)		0.16	2.18	0.14	2.16	4.48	7.60
1897	2.64	1.83	(.32)	(.57)		0.18	2.23	0.13	2.25	4.70	7.95
1898	2.57	1.98	(.33)	(.59)		0.19	2.27	0.14	2.30	4.83	8.12
1899	2.44	2.29	0.34	0.61		0.20	2.29	0.14	2.36	5.00	8.36
1900	2.46	2.19	0.35	0.66		0.20	2.32	0.15	2.38	5.04	8.38
1901	2.40	2.15	0.32	0.70		0.20	2.36	0.15	2.37	5.02	8.33
1902	2.29	2.08	0.36	0.65		0.23	2.15	0.16	2.28	4.82	7.97
1903	2.44	2.13	0.36	0.72		0.23	2.42	0.15	2.42	5.12	8.50
1904	2.53	2.03	0.36	0.73		0.22	2.45	0.15	2.44	5.13	8.52
1905	2.59	2.05	0.40	0.74		0.21	2.47	0.15	2.49	5.24	8.66
1906	2.70	2.05	0.45	0.82		0.22	2.49	0.15	2.59	5.42	8.93
1907	2.79	2.00	0.40	0.92		0.22	2.51	0.15	2.63	5.48	9.05
1908	2.76	2.06	0.40	0.85		0.23	2.56	0.16	2.61	5.47	9.08
1909	2.42	2.05	0.42	0.85		0.25	2.61	0.16	2.54	5.38	8.81
1910	2.55	1.99	0.45	0.91		0.24	2.65	0.16	2.61	5.50	9.01
1911	2.70	1.98	0.46	0.99		0.28	2.68	0.15	2.71	5.68	9.30
1912	2.59	2.17	0.45	0.95		0.30	2.70	0.14	2.71	5.72	9.36
1913	2.66	2.33	0.44	0.94		0.28	2.71	0.14	2.76	5.85	9.56
1914	2.70	2.44	0.45	0.94		0.28	2.73	0.13	2.80	5.94	9.73
1915	2.98	2.38	0.45	1.00		0.24	2.75	0.13	2.89	6.06	9.99
1916	2.96	2.50	0.44	0.97		0.24	2.76	0.13	2.90	6.09	10.06
1917	2.76	2.63	0.44	0.93		0.19	2.78	0.12	2.85	6.02	9.91
1918	3.18	2.46	0.45	0.94		0.21	2.82	0.13	2.95	6.17	10.25
1919	3.07	2.10	0.46	1.02		0.24	2.87	0.14	2.90	6.05	9.96
1920	2.92	1.95	0.45	1.00		0.22	2.96	0.13	2.81	5.87	9.69
1921	3.05	2.01	0.46	1.03		0.26	3.08	0.13	2.92	6.12	10.08
1922	3.48	2.07	0.49	1.11		0.23	3.22	0.12	3.13	6.50	10.79
1923	3.69	2.07	0.51	1.17		0.24	3.33	0.12	3.26	6.76	11.20
1924	3.32	2.10	0.52	1.16		0.24	3.47	0.13	3.20	6.70	11.01
1925	3.06	2.03	0.54	1.17		0.25	3.53	0.14	3.13	6.62	10.79
1926	3.22	1.98	0.55	1.25		0.26	3.63	0.14	3.24	6.80	11.10
1927	3.53	1.89	0.58	1.30		0.27	3.70	0.15	3.37	7.02	11.49
1928	3.50	1.94	0.57	1.30		0.29	3.73	0.17	3.37	7.05	11.57
1929	3.37	2.00	0.57	1.27	0.07	0.30	3.85	0.17	3.38	7.11	11.60
1930	3.28	2.08	0.62	1.31	0.07	0.32	3.90	0.19	3.43	7.26	11.77
1931	3.57	2.10	0.57	1.29	0.07	0.34	4.01	0.20	3.52	7.41	12.15
1932	3.54	2.23	0.58	1.22	0.09	0.30	4.04	0.19	3.52	7.43	12.19
1933	3.58	2.42	0.60	1.19	0.09	0.31	4.08	0.20	3.59	7.60	12.47
1934	2.67	2.28	0.56	1.16	0.09	0.31	3.95	0.19	3.23	6.97	11.21
1935	2.30	2.14	0.54	1.13	0.09	0.30	3.94	0.19	3.06	6.65	10.63
1936	2.80	2.27	0.56	1.16	0.12	0.30	3.98	0.19	3.28	7.05	11.38
1937	2.70	2.16	0.53	1.26	0.11	0.32	3.96	0.19	3.25	6.98	11.23
1938	3.10	2.21	0.52	1.25	0.11	0.33	4.12	0.19	3.42	7.27	11.83
1939	3.69	2.38	0.58	1.30	0.14	0.33	4.15	0.19	3.70	7.79	12.76
1940	3.68	2.46	0.59	1.33	0.15	0.34	4.26	0.20	3.77	7.96	13.01
1941	3.78	2.67	0.66	1.41	0.15	0.37	4.48	0.20	3.97	8.42	13.72
1942	4.56	2.92	0.76	1.63	0.15	0.38	4.61	0.20	4.45	9.31	15.21
1943	5.05	3.01	0.97	1.83	0.15	0.35	4.55	0.20	4.78	9.90	16.11
1944	4.45	3.09	0.92	1.97	0.17	0.32	4.55	0.19	4.67	9.74	15.66
1945	4.07	3.04	0.98	1.88	0.21	0.31	4.66	0.17	4.57	9.63	15.32
1946	4.05	2.98	0.86	1.88	0.21	0.29	4.58	0.15	4.46	9.37	15.00
1947	3.92	3.00	0.82	1.86	0.18	0.26	4.54	0.14	4.37	9.19	14.72
1948	3.94	2.89	0.77	1.84	0.17	0.23	4.38	0.13	4.26	8.92	14.35
1949	4.20	3.03	0.90	1.88	0.22	0.21	4.52	0.11	4.50	9.42	15.07
1950	4.37	3.33	0.95	1.98	0.24	0.22	4.54	0.11	4.71	9.84	15.74
1951	4.63	3.61	1.03	1.95	0.27	0.23	4.46	0.11	4.88	10.17	16.29
1952	4.26	3.91	1.03	1.95	0.30	0.24	4.46	0.12	4.87	10.24	16.27
1953	3.63	4.30	1.07	1.94	0.29	0.25	4.68	0.12	4.85	10.37	16.28
1954	3.94	4.33	1.12	1.98	0.33	0.26	4.75	0.13	5.03	10.69	16.84
1955	4.33	4.41	1.07	1.98	0.31	0.27	4.79	0.12	5.14	10.87	17.28
1956	4.07	4.34	1.27	2.01	0.37	0.26	4.88	0.13	5.20	11.05	17.33
1957	4.02	4.21	1.33	1.97	0.39	0.25	4.90	0.12	5.17	11.01	17.19

AO-27, SOURCES

Computation of Index in 1954 Prices:

COL. A, Hogs. Table AO-28, Col. I, times $.2160/lb. (Table AP-28, Col. D).

COL. B, Cattle and calves. Table AO-29, Col. D, times $.157/lb. (1954: value of production divided by quantity produced, *Ag. Stat. 1957*, Table 454).

COL. C, Chickens. Table AO-32, Col. H, times $.235/lb. (1954: value, live, of farm, nonfarm, and commercial broiler production of chickens ($1.12 billion) divided by production, dressed weight. Production and value include chickens consumed in establishments where produced, and also nonfarm (back yard) production).

COL. D, Eggs. Table AO-33, Col. H, times $.366/doz. (Table AP-32, Col. D).

COL. E, Turkeys. Table AO-34, Col. A, times $.288/lb. (average price received, Table AP-33, Col. A).

COL. F, Sheep and lambs. Table AO-35, Col. D, times $.164/lb. (1954: value of sheep and lamb production divided by quantity produced, live weight, *Ag. Stat. 1959*, p. 343).

COL. G, Milk and products. Table AO-36, Col. F, times $.0389/lb. (1954: farm value of milk produced, *Ag. Stat. 1957*, p. 465, divided by output).

COL. H, Wool. Table AO-39, Col. E, times $.45/lb. (value of shorn wool, *Ag. Stat. 1957*, Table 504, divided by output of all wool).

COLS. I and J, Output indicators, 1902 and 1929 prices. Computed exactly as Col. K, except that 1902 and 1929 prices were used as weights in the computation. (For weights, see notes, below.)

COL. K, Output indicator, 1954 prices. Sum, Cols. A through H, linked for missing series.

AO-27, NOTES

( ) Interpolation (straight line).

COL. C. The value of output of chickens is calculated from *Ag. Stat. 1957* as follows: To farm value of chickens produced (Table 592) is added 13.5% for back yard production, on the basis of Table 601, which gives farm and nonfarm production as 1,504 million pounds, which is 1.135 time 68% of live weight of chickens produced (Table 592); to this is added value of commercial broilers produced, from Table 596.

COL. G. The slight difference between the weight used here and the price for 1954 given in Table AP-35 is the difference between the average value of all milk products sold and the average of all milk products sold and utilized on the farm. The latter is a little higher presumably because a large proportion of the milk utilized on the farms comes from areas of higher prices.

COL. H. The price weight is reduced so as to eliminate the value of pulled wool from the aggregate, since this wool is covered in total output by the inclusion of the value of sheep and lambs sold for meat.

COLS. I and J. The weights used in the computation of the 1902- and 1929-weighted output indicators are as follows:

Commodity	*1902 price weights*	*1929 price weights*
A Hogs	$.0623/lb.	$.0942/lb.
B Cattle and calves	.040/lb.	.0963/lb.
C Chickens	.108/lb.	.259/lb
D Eggs	.17/doz.	.298/doz.
E Turkeys	.146/lb.	.245/lb.
F Sheep and lambs	.040/lb.	.105/lb.
G Milk and products	.00893/lb.	.0242/lb.
H Wool	.124/lb.	.259/lb.

AO-28. HOGS: Output

(billion pounds)

	S & B, est. slaughter, live wt.	USDA, dressed wt.	Col. B / Col. A	Slaughter, dressed weight	Strauss & Bean, production	Ag. Stat., production	Col. F / Col. E	Parker, slaughter	Preferred series, production, live weight
	A	B	C	D	E	F	G	H	I
1870	9.29			5.17	9.65			6.49	9.6
1871	10.15			5.65	10.48				10.5
1872	11.03			6.14	11.09				11.1
1873	10.24			5.70	10.06				10.1
1874	9.50			5.29	9.18				9.2
1875	9.20			5.12	9.19				9.2
1876	9.03			5.03	9.48				9.5
1877	10.42			5.80	10.92				10.9
1878	11.06			6.16	11.11				11.1
1879	10.85			6.04	10.92				10.9
1880	10.75			5.98	10.59			9.06	10.6
1881	10.51			5.85	10.45				10.5
1882	10.50			5.84	10.61				10.6
1883	10.61			5.91	10.92				10.9
1884	11.47			6.38	11.64				11.6
1885	11.62			6.47	11.39				11.4
1886	10.68			5.94	10.32				10.3
1887	9.82			5.47	9.77				9.8
1888	10.25			5.71	10.55				10.6
1889	10.86			6.04	11.31				11.3
1890	11.29			6.28	11.20			9.95	11.2
1891	10.97			6.11	16.69				16.7
1892	9.94			5.53	9.75				9.8
1893	10.44			5.81	10.80				10.8
1894	10.56			5.88	11.70				11.7
1895	10.89			6.06	11.08				11.1
1896	11.69			6.51	11.95				12.0
1897	11.94			6.65	12.20				12.2
1898	12.13			6.75	11.92				11.9
1899	11.40	6.31	.5535	6.31	11.34				11.3
1900	11.43	6.33	.5538	6.33	11.38			11.92	11.4
1901	11.46	6.36	.5550	6.36	11.11				11.1
1902	10.61	5.94	.5598	5.94	10.64				10.6
1903	10.82	6.07	.5610	6.07	11.26				11.3
1904	11.47	6.39	.5571	6.39	11.66				11.7
1905	11.98	6.63	.5534	6.63	12.04				12.0
1906	12.12	6.79	.5602	6.79	12.48				12.5
1907	12.62	7.06	.5594	7.06	12.85				12.9
1908	13.57	7.54	.5556	7.54	12.84				12.8
1909	11.74	6.56	.5588	6.56	11.18				11.2
1910	10.89	6.09	.5592	6.09	11.80				11.8
1911	12.51	6.96	.5564	6.96	12.51				12.5
1912	12.17	6.82	.5604	6.82	11.96				12.0
1913	12.39	6.98	.5634	6.98	12.28				12.3
1914	12.00	6.82	.5683	6.82	12.47				12.5
1915	13.30	7.62	.5729	7.62	13.80				13.8
1916	14.12	8.21	.5814	8.21	13.74				13.7
1917	12.10	7.06	.5835	7.06	12.77				12.8
1918	14.52	8.35	.5751	8.35	14.70				14.7
1919	14.72	8.48	.5761	8.48	14.20				14.2
1920	13.69	7.65	.5588	7.65	13.54				13.5
1921	13.96	7.70	.5516	7.70	14.07				14.1
1922	14.91	8.14	.5459	8.14	16.09				16.1
1923	17.39	9.48	.5451	9.48	17.05				17.1
1924	17.05	9.15	.5367	9.15	15.70	15.39	.980		15.39
1925	14.73	8.13	.5519	8.13	14.27	14.17	.993		14.17
1926	14.51	7.97	.5493	7.97	14.94	14.91	.998		14.91
1927	15.25	8.43	.5528	8.43	16.05	16.34	1.02		16.34
1928	16.53	9.04	.5469	9.04	16.18	16.19	1.00		16.19
1929	16.27	8.83	.5427	8.83	15.85	15.58	.983		15.58
1930	15.33	8.48	.5532	8.48	15.22	15.18	.997		15.18
1931	15.85	8.74	.5514	8.74	16.41	16.54	1.01		16.54
1932	16.21	8.92	.5503	8.92	16.56	16.37	.989		16.37
1933	16.64	9.23	.5547	9.23	16.20	16.57	1.023		16.57
1934	15.15	8.40	.5545	8.40	12.70	12.38	.975		12.38
1935	10.35	5.92	.5720	5.92	10.83	10.67	.985		10.67
1936	13.19	7.47	.5663	7.47	13.20	12.98	.983		12.98
1937	11.99	6.95	.5796	6.95	12.17	12.51	1.028		12.51
1938		7.68		7.68		14.37			14.37
1939		8.66		8.66		17.08			17.08
1940		10.04		10.04		17.04			17.04
1941		9.53		9.53		17.49			17.49
1942		10.88		10.88		21.11			21.11
1943		13.64		13.64		23.37			23.37
1944		13.30		13.30		20.58			20.58
1945		10.70		10.70		18.84			18.84
1946		11.15		11.15		18.74			18.74
1947		10.50		10.50		18.16			18.16
1948		10.06		10.06		18.22			18.22
1949		10.29		10.29		19.46			19.46
1950		10.71		10.71		20.21			20.21
1951		11.48		11.48		21.44			21.44
1952		11.53		11.53		19.73			19.73
1953		10.01		10.01		16.80			16.80
1954		9.87		9.87		18.22			18.22
1955		10.99		10.99		20.04			20.04
1956		11.22		11.22		18.86			18.86
1957		10.48		10.48		18.62			18.62

AO-28, SOURCES

COL. A, Strauss & Bean, Table 54, hogs, estimated slaughter, live weight.

COL. B

1899-1908. *Hist. Stat. 1949,* series E-146, pork production, dressed weight (source, USDA, Production and Marketing Administration).

1909-55. *Consumption of Food,* 1956 Supplement, Table 54D, pork production, excluding lard.

1956-57. *Ag. Stat.* 1959, Table 531.

COL. C, Ratio, Col. B/Col. A.

COL. D, Slaughter, dressed weight

1870-98. Col. A times the average of the 1895-1903 ratios in Col. C (.5566).

1899-1957. Col. B, transcribed.

COL. E, Strauss & Bean, Table 72, p. 136, hog production adjusted for changes in inventories (calendar years).

COL. F, *Ag. Stat. 1952,* Table 465, and *1957,* Table 472, quantity produced (live weight of slaughter, adjusted for changes in inventory).

COL. G, Ratio, Col. F/Col. E.

COL. H, William N. Parker, "Trends in Food Consumption in the U.S., 1840-1910," a paper given at the 1957 meeting of the American Statistical Association, Table 4, row 1, live weight of slaughter.

COL. I, Preferred series, hog production, live weight

1870-1923. Col. E, transcribed.

1924-57. Col. F, transcribed.

AO-28, NOTES

COL. H. Recent estimates of hog slaughter, made by William N. Parker, differ considerably from those of Strauss and Bean. Parker based his estimates on June 1 rather than January 1 inventories. The June 1 inventories had a higher count and underwent an increase relative to inventories at other periods during the year (due to the increase in summer pack made possible by better refrigeration facilities). Parker used a slaughter inventory ratio which also increases (because of decrease in slaughter-age) but which is considerably less than the ratio used by Strauss and Bean. The result is that the Parker estimates of live weight of slaughter are 30%, 16%, and 12% less than the Strauss and Bean estimates for 1870, 1880, and 1890 respectively.

COL. I represents the production, in terms of pounds live weight, of hogs on farms, i.e., slaughter plus changes in inventory. Col. D represents slaughter only and is in terms of dressed weight excluding lard. The differences in level between the two series represent dressing yield. The differences in fluctuations are due to changes in inventories. There is no difference in trend.

AO-29. CATTLE AND CALVES: Output

(billion pounds, live weight)

	Strauss & Bean	Hist. Stat. & Ag. Stat.	Col. B / Col. A	Preferred series, production
	A	B	C	D
1870	5.71			5.71
1871	5.87			5.87
1872	5.88			5.88
1873	6.24			6.24
1874	6.09			6.09
1875	6.43			6.43
1876	6.92			6.92
1877	7.87			7.87
1878	8.28			8.28
1879	8.61			8.61
1880	8.45			8.45
1881	8.67			8.67
1882	9.15			9.15
1883	10.22			10.22
1884	10.83			10.83
1885	11.13			11.13
1886	11.02			11.02
1887	11.58			11.58
1888	10.91			10.91
1889	11.49			11.49
1890	11.10			11.10
1891	9.60			9.60
1892	8.34			8.34
1893	7.44			7.44
1894	8.06			8.06
1895	9.05			9.05
1896	10.43			10.43
1897	11.64			11.64
1898	12.64			12.64
1899	14.56			14.56
1900	13.96			13.96
1901	13.69			13.69
1902	13.27			13.27
1903	13.55			13.55
1904	12.95			12.95
1905	13.07			13.07
1906	13.07			13.07
1907	12.73			12.73
1908	13.11			13.11
1909	13.10	13.08	.998	13.08
1910	12.64	12.67	1.00	12.67
1911	12.66	12.59	.994	12.59
1912	13.93	13.81	.991	13.81
1913	15.21	14.87	.978	14.87
1914	16.02	15.56	.971	15.56
1915	15.57	15.14	.972	15.14
1916	16.42	15.93	.970	15.93
1917	16.96	16.76	.988	16.76
1918	15.61	15.66	1.00	15.66
1919	13.30	13.39	1.01	13.39
1920	12.35	12.40	1.00	12.40
1921	13.12	12.82	.977	12.82
1922	13.09	13.19	1.01	13.19
1923	13.12	13.17	1.00	13.17
1924	12.77	13.40	1.05	13.40
1925	12.78	12.95	1.01	12.95
1926	13.19	12.60	.955	12.60
1927	12.99	12.07	.929	12.07
1928	13.57	12.33	.909	12.33
1929	14.05	12.75	.907	12.75
1930	14.01	13.26	.946	13.26
1931	14.65	13.39	.914	13.39
1932	15.63	14.23	.910	14.23
1933	16.62	15.40	.927	15.40
1934	10.48	14.54	1.39	14.54
1935	14.12	13.65	.967	13.65
1936	14.81	14.44	.975	14.44
1937	14.82	13.75	.928	13.75
1938		14.05		14.05
1939		15.18		15.18
1940		15.70		15.70
1941		17.03		17.03
1942		18.57		18.57
1943		19.16		19.16
1944		19.71		19.71
1945		19.35		19.35
1946		19.00		19.00
1947		19.13		19.13
1948		18.40		18.40
1949		19.27		19.27
1950		21.19		21.19
1951		22.99		22.99
1952		24.93		24.93
1953		27.41		27.41
1954		27.58		27.58
1955		28.09		28.09
1956		27.67		27.67
1957		26.81		26.81

AO-30. CATTLE: Output

	S & B, slaughter, live wt. (bil. lb.)	AMS, beef prod., carcass wt. (bil. lb.)	Col. B / Col. A	Col. A x 1909-13 ratios in Col. C	S & B live cattle exports, dressed wt. (mil. lb.)	Preferred series (bil. lb.)
	A	B	C	D	E	F
1870	4.744			2.480	15	2.495
1871	4.922			2.573	15	2.588
1872	5.098			2.665	16	2.681
1873	5.236			2.737	21	2.758
1874	5.416			2.831	29	2.860
1875	5.525			2.888	34	2.922
1876	5.673			2.965	34	2.999
1877	5.888			3.078	42	3.120
1878	6.241			3.262	78	3.340
1879	6.593			3.446	92	3.538
1880	6.928			3.621	143	3.764
1881	7.146			3.735	94	3.829
1882	7.380			3.858	50	3.908
1883	7.680			4.014	116	4.130
1884	8.107			4.238	98	4.336
1885	8.577			4.483	91	4.574
1886	9.011			4.710	77	4.787
1887	9.377			4.901	70	4.971
1888	9.708			5.074	103	5.177
1889	9.848			5.148	218	5.366
1890	10.029			5.242	276	5.518
1891	10.068			5.263	219	5.482
1892	9.799			5.122	193	5.315
1893	9.330			4.877	164	5.041
1894	8.792			4.596	279	4.875
1895	8.457			4.420	192	4.612
1896	8.434			4.408	262	4.670
1897	8.691			4.543	260	4.803
1898	9.146			4.781	263	5.044
1899	10.340			5.405	271	5.676
1900	10.470			5.473	280	5.753
1901	10.930			5.713	302	6.015
1902	10.760			5.624	217	5.841
1903	11.700			6.116	345	6.461
1904	11.610			6.069	397	6.466
1905	12.270			6.414	378	6.792
1906	12.410			6.487	328	6.815
1907	12.540			6.555	266	6.821
1908	12.620			6.596	183	6.779
1909	13.130	6.915	.5266		122	7.037
1910	12.750	6.647	.5213		73	6.720
1911	12.530	6.549	.5227		109	6.658
1912	11.990	6.234	.5199		30	6.264
1913	11.820	6.182	.5230		17	6.199
1914	11.520	6.017	.5223		5	6.022
1915	11.670	6.075	.5206		11	6.086
1916	12.430	6.460	.5197		8	6.468
1917	14.000	7.239	.5171		13	7.252
1918	15.010	7.726	.5147		11	7.737
1919	13.130	6.756	.5145		47	6.803
1920	12.120	6.306	.5203		56	6.362
1921	11.370	6.022	.5296		130	6.152
1922	12.440	6.588	.5296		74	6.662
1923	12.690	6.721	.5296		24	6.745
1924	13.100	6.877	.5250		40	6.917
1925	13.190	6.878	.5215		54	6.932
1926	13.430	7.089	.5278		15	7.104
1927	12.130	6.395	.5272		13	6.408
1928	10.950	5.771	.5270		7	5.778
1929	11.030	5.871	.5323		5	5.876
1930	11.000	5.917	.5379		5	5.922
1931	11.030	6.009	.5448		3	6.012
1932	10.699	5.789	.5411		3	5.792
1933	11.830	6.440	.5444		2	6.442
1934	13.220	8.345	.6312		7	8.352
1935	12.800	6.608	.5163		2	6.610
1936	14.081	7.358	.5225			7.358
1937	13.309	6.798	.5108			6.798
1938		6.908				6.908
1939		7.011				7.011
1940		7.175				7.175
1941		8.082				8.082
1942		8.843				8.843
1943		8.571				8.571
1944		9.112				9.112
1945		10.276				10.276
1946		9.373				9.373
1947		10.432				10.432
1948		9.075				9.075
1949		9.439				9.439
1950		9.534				9.534
1951		8.837				8.837
1952		9.650				9.650
1953		12.407				12.407
1954		12.963				12.963
1955		13.569				13.569
1956		14.462				14.462
1957		14.211				14.211

AO-31. CALVES: Output

(million pounds)

	S & B, calves, slaughter, live weight	AMS, veal prod., carcass wt. equiv.	Col. B / Col. A	Preferred series, veal prod., carcass wt.
	A	B	C	D
1870	124			71
1871	141			81
1872	158			91
1873	175			100
1874	196			112
1875	212			121
1876	230			132
1877	255			146
1878	280			160
1879	314			180
1880	330			189
1881	355			203
1882	366			210
1883	398			228
1884	416			238
1885	459			263
1886	483			277
1887	520			298
1888	539			309
1889	568			325
1890	576			330
1891	598			343
1892	581			333
1893	551			316
1894	517			296
1895	493			282
1896	493			282
1897	527			302
1898	570			326
1899	673			385
1900	690			395
1901	733			420
1902	828			474
1903	856			490
1904	856			490
1905	969			555
1906	1044			598
1907	1090			624
1908	1111			636
1909	1154	660	.572	660
1910	1166	667	.572	667
1911	1161	666	.574	666
1912	1156	662	.573	662
1913	1062	608	.573	608
1914	995	569	.572	569
1915	1027	590	.574	590
1916	1143	655	.573	655
1917	1306	744	.570	744
1918	1335	760	.569	760
1919	1427	819	.574	819
1920	1470	842	.573	842
1921	1437	820	.571	820
1922	1499	852	.568	852
1923	1599	916	.573	916
1924	1697	972	.573	972
1925	1722	989	.574	989
1926	1647	955	.580	955
1927	1511	867	.574	867
1928	1360	773	.568	773
1929	1330	761	.572	761
1930	1377	792	.575	792
1931	1425	823	.578	823
1932	1405	822	.585	822
1933	1532	891	.582	891
1934	1846	1246	.675	1246
1935	1781	1023	.574	1023
1936	1916	1075	.561	1075
1937	1918	1108	.578	1108
1938		994		994
1939		991		991
1940		981		981
1941		1036		1036
1942		1151		1151
1943		1167		1167
1944		1738		1738
1945		1664		1664
1946		1443		1443
1947		1605		1605
1948		1423		1423
1949		1334		1334
1950		1230		1230
1951		1059		1059
1952		1169		1169
1953		1546		1546
1954		1647		1647
1955		1578		1578
1956		1632		1632
1957		1528		1528

AO-29 (Cattle and Calves), SOURCES

Col. A, Strauss & Bean, Table 72, p. 136, production of cattle plus calves, calendar years.

Col. B

1909-49. *Hist. Stat. 1949,* series E-127.

1950-57. *Ag. Stat. 1959,* Table 463, cattle and calves, quantity produced (live weight).

Col. C, Ratio, Col. B/Col. A.

Col. D, Preferred series

1870-1908. Col. A, transcribed.

1909-57. Col. B, transcribed.

AO-29, NOTES

The data are for slaughter of cattle and calves plus exports of live cattle, adjusted for changes in inventory.

AO-30 (Cattle), SOURCES

Col. A, Strauss & Bean, Table 48, p. 110, cattle, estimated slaughter, live weight.

Col. B, *Consumption of Food,* Supplements for 1956 and 1958, Table 54a, beef production, carcass weight equivalent.

Col. C, Ratio, Col. B/Col. A.

Col. D, Col. A times the average of the 1909-13 ratios in Col. C (.5227).

Col. E, Strauss & Bean, Table 49, p. 111, Live cattle exports, live weight, times 53% to obtain dressed weight.

Col. F, Preferred series, cattle (excluding calves), dressed weight.

1870-1908. Col. D plus Col. E.

1909-57. Col. B plus Col. E.

AO-30, NOTES

This table represents output of beef cattle in terms of production entering the market and differs from Table AO-29, which includes adjustments for farm inventories of live cattle.

Col. C. The ratio for 1909-13 approximates the percentage that dressed or carcass weight is of live weight.

Col. F. No additions for exports of live cattle are necessary for recent years because of their insignificance.

AO-31 (Calves), SOURCES

Col. A, Strauss & Bean, Table 51, p. 114, calves, estimated slaughter, live weight.

Col. B, *Consumption of Food,* Supplements for 1956 and 1958, Table 54b, veal production, carcass weight equivalents.

Col. C, Ratio, Col. B/Col. A.

Col. D, Preferred series, calves, slaughter, dressed weight.

1870-1908. Col. A times the average of 1909-13 ratios in Col. C (.5728).

1909-57. Col. B, transcribed.

AO-31, NOTES

See Table AO-30, "Cattle: Output."

AO-32. CHICKENS: Output

(million pounds)

	Dressed wt., farm & commercial	No. of chickens x live wt.	Col. A / Col. B	Col. B x .9826	Pounds, farm prod.	Col. D / Col. E	Col. E x .93	Preferred series, N.Y. dressed weight
	A	B	C	D	E	F	G	H
1869					592		551	551
1870					612			
1871					632			
1872					652			
1873					676			
1874					700			
1875					724			
1876					748			
1877					772			
1878					796			
1879					824		766	766
1880					852			
1881					880			
1882					908			
1883					936			
1884					968			
1885					1000			
1886					1032			
1887					1068			
1888					1104			
1889					1144		1064	1064
1890					1176			
1891					1212			
1892					1248			
1893					1284			
1894					1320			
1895					1360			
1896					1400			
1897		1328		1305	1440	.91		
1898		1328		1305	1484	.88		
1899		1452		1427	1528	.93		1427
1900		1528		1501	1556	.96		1501
1901		1401		1377	1576	.87		1377
1902		1556		1529	1596	.96		1529
1903		1564		1537	1615	.95		1537
1904		1571		1544	1637	.94		1544
1905		1748		1718	1659	1.04		1718
1906		1941		1907	1681	1.13		1907
1907		1740		1710	1702	1.00		1710
1908		1741		1711	1722	.99		1711
1909	1774	1858	.95	1826	1742	1.05		1774
1910	1904	2009	.95	1974	1743	1.13		1904
1911	1955	1913	1.02	1880	1758	1.07		1955
1912	1896	1898	1.00	1865	1776	1.05		1896
1913	1885	1902	.99	1869	1794	1.04		1885
1914	1907	1965	.97	1931	1813	1.07		1907
1915	1928	1902	1.01	1869	1833	1.02		1928
1916	1878	1854	1.01	1822	1850	.98		1878
1917	1857	1883	.99	1850	1868	.99		1857
1918	1896	2009	.94	1974	1891	1.04		1896
1919	1976	1950	1.01	1916	1913	1.00		1976
1920	1932	1902	1.02	1869	1972	.95		1932
1921	1952	2057	.95	2021	2031	1.00		1952
1922	2076	2164	.96	2126	2098	1.01		2076
1923	2172	2257	.96	2218	2168	1.02		2172
1924	2226	2238	.99	2199	2238	.98		2226
1925	2280	2316	.98	2276	2316	.98		2280
1926	2341	2460	.95	2417	2460	.98		2341
1927	2474	2568	.96	2523	2568	.98		2474
1928	2417	2368	1.02	2327	2368	.98		2417
1929	2442	2560	.95	2515	2560	.98		2442
1930	2626	2642	.99	2596	2642	.98		2626
1931	2426	2394	1.01	2352	2394	.98		2426
1932	2465	2490	.99	2447	2490	.98		2465
1933	2572	2534	1.01	2490	2534	.98		2572
1934	2392	2238	1.07	2199	2238	.98		2392
1935	2297	2338	.98	2297	2338	.98		2297
1936	2392	2601	.92	2556	2601	.98		2392
1937	2273	2129	1.06	2102	2161	.97		2273
1938	2214							2214
1939	2458							2458
1940	2514							2514
1941	2789							2789
1942	3241							3241
1943	4135							4135
1944	3903							3903
1945	4154							4154
1946	3639							3639
1947	3479							3479
1948	3288							3288
1949	3830							3830
1950	4060							4060
1951	4380							4380
1952	4390							4390
1953	4540							4540
1954	4760							4760
1955	4550							4550
1956	5420							5420
1957	5640							5640

AO-32, SOURCES

COL. A

1909-50. *Ag. Stat. 1952,* Table 598, dressed weight (88% live weight) production.

1951-54. *Ag. Stat. 1956,* Table 581, dressed weight (88% live weight) production. Farm dressed weight production converted from 68% to 88% of live weight, and commercial broiler production from 70% to 88%, to compare with data from *Ag. Stat. 1952.*

1955. *Consumption of Food,* Table 57.

1956-57. *The National Food Situation,* p. 71, "Total" multiplied by 1.278 (1947-54 average ratio of dressed weight basis to ready-to-cook basis).

COL. B, Barger & Landsberg, Table A-1 (71), numbers of chickens produced on farms, times Strauss & Bean, Table 45, live weight per chicken.

COL. C, Ratio, Col. A/Col. B.

COL. D, Col. B times the geometric average of the ratios in Col. C for 1909-1918 (ratio, .9826).

COL. E, Strauss & Bean, Table 45, farm production in pounds.

Col. F, Ratio, Col. D/Col. E.

COL. G, The 1899 ratio in Col. F times the figures in Col. E for 1869, 1879, and 1889.

COL. H, Preferred series, New York dressed-weight basis

1869, 1879, 1889. Col. G, transcribed.

1899-1908. Col. D, transcribed.

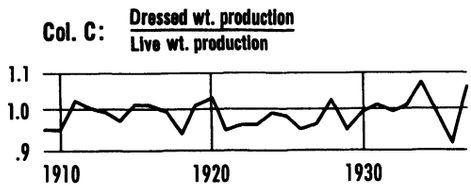
1909-57. Col. A, transcribed.

AO-32, NOTES

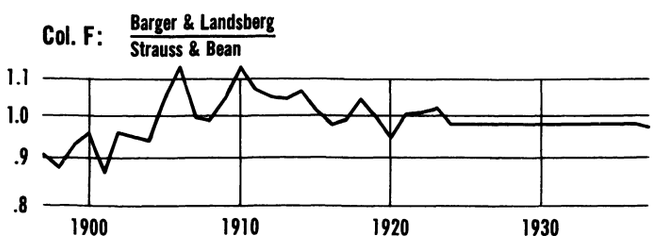
COL. A. Data refer to the dressed weight (88% of live weight) production of farm and nonfarm and commercial chickens. Farm and nonfarm production are made up of "consumption on farms and sales, plus 10% of same to allow for nonfarm production."

Commercial broiler production is brought in in 1934, at which time it amounted to 3½% of total production. It amounted to over 75% in 1957.

COL. B. Barger & Landsberg data refer only to numbers of farm chickens raised. These have been multiplied by Strauss & Bean estimates of live weight per chicken. Strauss & Bean estimated 4 lb. per head for 1869-1900 and 3.7 lb. for 1910-1937. Weights for the intervening years, 1901 through 1909, were computed by Strauss & Bean on the basis of linear interpolation from 4 lb. to 3.7 lb.



COL. E. Strauss and Bean used 1880, 1890, 1900, and 1910 census inventory data, revised in 1930 by the U.S. Department of Agriculture. Strauss and Bean estimated numbers raised minus losses in order to approximate production, basing their ratio (numbers raised to number in inventory) on Census data and experimental enumerations by the Crop Reporting Board of the USDA. Annual data were obtained by logarithmic straight line interpolation of adjusted census figures.



AO-33. EGGS: Output

(billion dozen)

	USDA, total egg production	Barger & Landsberg, production	Col. A / Col. B	Col. B x 1.15	Strauss & Bean, production	Col. D / Col. E	Col. E x 1.15	Preferred series, production
	A	B	C	D	E	F	G	H
1869					.29		.33	.33
1870					.30			
1871					.32			
1872					.34			
1873					.36			
1874					.39			
1875					.41			
1876					.43			
1877					.46			
1878					.48			
1879					.51		.59	.59
1880					.54			
1881					.58			
1882					.61			
1883					.65			
1884					.69			
1885					.73			
1886					.77			
1887					.82			
1888					.87			
1889					.92		1.06	1.06
1890					.96			
1891					1.00			
1892					1.05			
1893					1.10			
1894					1.15			
1895					1.20			
1896					1.26			
1897		1.42		1.63	1.32	1.23		
1898		1.45		1.67	1.38	1.21		
1899		1.45		1.67	1.45	1.15		1.67
1900		1.57		1.81	1.50	1.21		1.81
1901		1.66		1.91	1.54	1.24		1.91
1902		1.55		1.78	1.58	1.13		1.78
1903		1.71		1.97	1.63	1.21		1.97
1904		1.74		2.00	1.68	1.19		2.00
1905		1.76		2.02	1.73	1.17		2.02
1906		1.96		2.25	1.78	1.26		2.25
1907		2.19		2.52	1.83	1.38		2.52
1908		2.02		2.32	1.88	1.23		2.32
1909	2.32	2.02	1.15	2.32	1.94	1.20		2.32
1910	2.48	2.15	1.15	2.47	1.98	1.25		2.48
1911	2.70	2.35	1.15	2.70	2.02	1.34		2.70
1912	2.59	2.26	1.15	2.60	2.08	1.25		2.59
1913	2.58	2.25	1.15	2.59	2.12	1.22		2.58
1914	2.56	2.22	1.15	2.55	2.18	1.17		2.56
1915	2.74	2.39	1.15	2.75	2.22	1.24		2.74
1916	2.64	2.30	1.15	2.64	2.28	1.16		2.64
1917	2.54	2.21	1.15	2.54	2.32	1.09		2.54
1918	2.57	2.24	1.15	2.58	2.38	1.08		2.57
1919	2.80	2.45	1.14	2.82	2.46	1.15		2.80
1920	2.72	2.39	1.14	2.75	2.50	1.10		2.72
1921	2.82	2.48	1.14	2.85	2.55	1.12		2.82
1922	3.02	2.66	1.14	3.06	2.60	1.18		3.02
1923	3.21	2.82	1.14	3.24	2.68	1.21		3.21
1924	3.17	2.80	1.13	3.22	2.75	1.17		3.17
1925	3.20	2.83	1.13	3.25	2.83	1.15		3.20
1926	3.41	3.02	1.13	3.47	3.02	1.15		3.41
1927	3.54	3.13	1.13	3.60	3.13	1.15		3.54
1928	3.54	3.14	1.13	3.61	3.14	1.15		3.54
1929	3.48	3.08	1.13	3.54	3.08	1.15		3.48
1930	3.58	3.18	1.13	3.66	3.18	1.15		3.58
1931	3.53	3.14	1.12	3.61	3.14	1.15		3.53
1932	3.33	2.95	1.13	3.39	2.95	1.15		3.33
1933	3.26	2.89	1.13	3.32	2.89	1.15		3.26
1934	3.16	2.81	1.12	3.23	2.81	1.15		3.16
1935	3.08	2.72	1.13	3.13	2.72	1.15		3.08
1936	3.17	2.77	1.14	3.19	2.77	1.15		3.17
1937	3.44	3.09	1.11	3.55	3.09	1.15		3.44
1938	3.42	3.03	1.13	3.48				3.42
1939	3.56	3.14	1.13	3.61				3.56
1940	3.64							3.64
1941	3.84							3.84
1942	4.46							4.46
1943	5.00							5.00
1944	5.37							5.37
1945	5.15							5.15
1946	5.13							5.13
1947	5.08							5.08
1948	5.03							5.03
1949	5.15							5.15
1950	5.40							5.40
1951	5.32							5.32
1952	5.32							5.32
1953	5.31							5.31
1954	5.40							5.40
1955	5.40							5.40
1956	5.48							5.48
1957	5.39							5.39

AO-33, SOURCES

COL. A

1909-54. *Ag. Stat. 1952*, Table 615, and *1956*, Table 595, farm and nonfarm production.

1955-57. *The National Food Situation*, July 1958, p. 54.

COL. B, Barger & Landsberg, Table A1 (70), farm production.

COL. C, Ratio, Col. A/Col. B.

COL. D, Col. B times the average of the 1909-1913 ratios found in Col. C (ratio, 1.150).

COL. E, Strauss & Bean, Table 46.

COL. F, Ratio, Col. D/Col. E.

COL. G, 1869, 1879, 1889 figures in Col. E times the 1899 figure in Col. F (1.15).

COL. H, Preferred series

1869, 1879, and 1889. Col. G, transcribed.

1899-1908. Col. D, transcribed.

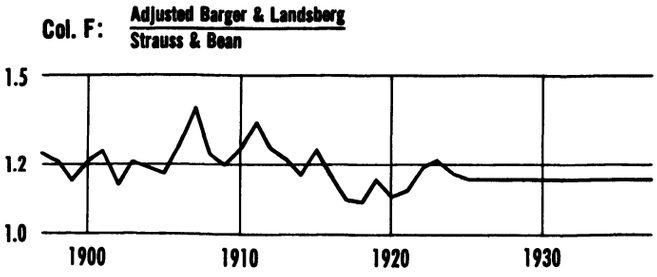
1909-57. Col. A, transcribed.

AO-33, NOTES

COL. A. The USDA series is "farm production, plus nonfarm production estimated at 10% of farm production" and includes eggs used for hatching.

COL. B. Barger & Landsberg figures represent net farm output and exclude eggs used for hatching.

COL. E. Strauss & Bean used Census data, which had been adjusted by the USDA for underenumeration. Annual data were derived by logarithmic linear interpolation of the adjusted figures.



COL. H. Barger & Landsberg data have been raised by 15% to take account of nonfarm production and to include eggs used for hatching. Only the 1869, 1879, and 1889 Strauss & Bean figures have been used because data for the other years were obtained by interpolation.

AO-34. TURKEYS: Output

AO-34 (Turkeys), SOURCES

Col. A, *Ag. Stat. 1952*, p. 536, and *1959*, p. 428, farm production, pounds live weight produced.

	Farm production, live weight produced (mil. lb.)
	A
1929	239
1930	228
1931	244
1932	303
1933	319
1934	300
1935	298
1936	405
1937	376
1938	395
1939	494
1940	506
1941	517
1942	526
1943	517
1944	591
1945	740
1946	714
1947	611
1948	574
1949	769
1950	817
1951	950
1952	1049
1953	1008
1954	1161
1955	1090
1956	1274
1957	1351

AO-35. SHEEP AND LAMBS: Output

(million pounds)

	Strauss & Bean, estimates	Ag. Stat., production	Col. B / Col. A	Preferred series, production, live weight
	A	B	C	D
1870	260			308
1871	270			320
1872	280			332
1873	285			338
1874	315			373
1875	320			379
1876	330			391
1877	335			397
1878	370			439
1879	380			450
1880	390			462
1881	400			474
1882	415			492
1883	455			539
1884	465			551
1885	480			569
1886	500			592
1887	510			604
1888	560			664
1889	575			681
1890	590			699
1891	600			711
1892	620			735
1893	670			794
1894	730			865
1895	790			936
1896	840			995
1897	910			1078
1898	975			1155
1899	1005			1191
1900	1030			1221
1901	1146			1240
1902	1178			1396
1903	1174			1391
1904	1126			1334
1905	1104			1308
1906	1127			1335
1907	1151			1364
1908	1161			1376
1909	1261			1494
1910	1239			1468
1911	1433			1698
1912	1523			1805
1913	1462			1732
1914	1434			1699
1915	1254			1486
1916	1221			1447
1917	981			1162
1918	1067			1264
1919	1244			1474
1920	1116			1322
1921	1346			1595
1922	1158			1372
1923	1227			1454
1924	1257	1459	1.161	1459
1925	1262	1508	1.195	1508
1926	1341	1609	1.200	1609
1927	1318	1664	1.263	1664
1928	1399	1773	1.267	1773
1929	1441	1823	1.265	1823
1930	1719	1965	1.143	1965
1931	1848	2052	1.110	2052
1932	1856	1829	0.985	1829
1933	1796	1860	1.036	1860
1934	1676	1911	1.140	1911
1935	1847	1835	0.994	1835
1936	1812	1852	1.022	1852
1937	1820	1932	1.062	1932
1938		2038		2038
1939		2029		2029
1940		2101		2101
1941		2251		2251
1942		2313		2313
1943		2108		2108
1944		1938		1938
1945		1912		1912
1946		1762		1762
1947		1567		1567
1948		1383		1383
1949		1278		1278
1950		1336		1336
1951		1372		1372
1952		1471		1471
1953		1538		1538
1954		1607		1607
1955		1617		1617
1956		1566		1566
1957		1522		1522

AO-35 (Sheep and Lambs), SOURCES

COL. A, Strauss & Bean, pp. 122 and 123, estimated total consumption and slaughter of sheep and lambs, in live weight equivalent.

COL. B, *Ag. Stat. 1952*, p. 426, and *1959*, p. 343, quantity produced (live weight).

COL. C, Ratio, Col. B/Col. A.

COL. D, Preferred series

1870-1923. Col. A multiplied by average 1924-26 ratio in Col. C (1.185).

1924-57. Col. B, transcribed.

AO-36 (Milk), SOURCES

COL. A, Strauss & Bean, Table 44, total dairy products.

COL. B, *Ag. Stat. 1952*, Table 539, and *1959*, Table 558, milk, total production on farms.

COL. C, Ratio, Col. B/Col. A.

COL. D, USDA, Agricultural Research Service, *Changes in Farm Production and Efficiency* (Statistical Bulletin 233, revised Sept. 1959), Table 1.

COL. E, Ratio, Col. F/Col. D.

COL. F, Preferred series

1870-1923. Col. A times the average of the 1924-28 ratios of Col. C (1.0462).

1924-57. Col. B, transcribed.

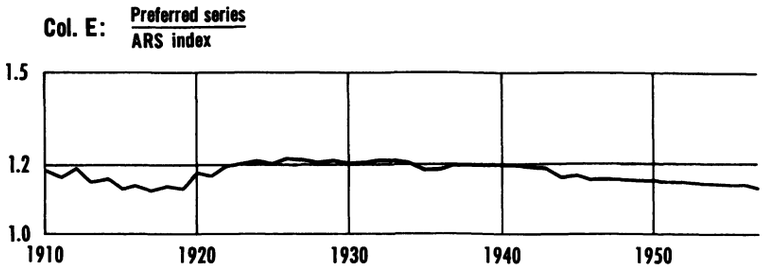
AO-36, NOTES

COL. A. Strauss and Bean present the only readily available series for dairy products for the early years. Their series was derived on the basis of Bureau of Agricultural Economics estimates and revisions of census data for 1899 and following years, with interpolations to obtain annual data. Prior to 1899, total milk production was extrapolated on the basis of output data of processed dairy products. The resulting data were then checked against butter prices and condition of feed crop (of the preceding year). This led to downward adjustments for the extrapolated figures for 1882 and 1891-95 and for the interpolated figure for 1902.

COL. B. The series excludes milk fed to calves and milk production not on farms.

COL. D. The ARS index has been derived with 1935-39 average unit values as weights for 1939 and prior years and 1947-49 average unit values as weights for later years.

COL. E. The chart shows the ratio of the combined *Agricultural Statistics* - Strauss & Bean series to the ARS series for all dairy products.



AO-36. MILK: Output

	Strauss & Bean, total dairy products (bil. lb.)	Ag. Stat., total production on farms (bil. lb.)	Col. B / Col. A	ARS, dairy products (1947-49 = 100)	Col. F / Col. D	Preferred series (bil. lb.)
	A	B	C	D	E	F
1870	18.2					19.0
1871	19.5					20.4
1872	20.8					21.8
1873	22.0					23.0
1874	23.3					24.4
1875	24.6					25.7
1876	26.0					27.2
1877	27.4					28.7
1878	28.6					29.9
1879	29.9					31.3
1880	31.1					32.5
1881	32.3					33.8
1882	30.0					31.4
1883	34.5					36.1
1884	35.6					37.2
1885	36.7					38.4
1886	37.8					39.5
1887	39.0					40.8
1888	40.4					42.3
1889	41.7					43.6
1890	43.2					45.2
1891	40.4					42.3
1892	39.6					41.4
1893	38.3					40.1
1894	39.0					40.8
1895	46.3					48.4
1896	53.5					56.0
1897	54.8					57.3
1898	55.8					58.4
1899	56.3					58.9
1900	57.0					59.6
1901	58.0					60.7
1902	52.9					55.3
1903	59.5					62.2
1904	60.1					62.9
1905	60.6					63.4
1906	61.2					64.0
1907	61.7					64.6
1908	62.9					65.8
1909	64.0					67.0
1910	65.1			58	1.17	68.1
1911	65.8			59	1.17	68.8
1912	66.3			59	1.18	69.4
1913	66.6			61	1.14	69.7
1914	67.0			61	1.15	70.1
1915	67.5			63	1.12	70.6
1916	67.9			63	1.13	71.0
1917	68.3			64	1.12	71.5
1918	69.4			64	1.13	72.6
1919	70.6			66	1.12	73.9
1920	72.6			65	1.17	76.0
1921	75.8			68	1.17	79.3
1922	79.2			70	1.18	82.9
1923	81.9			72	1.19	85.7
1924	84.5	89.2	1.056	74	1.20	89.2
1925	85.7	90.7	1.058	76	1.19	90.7
1926	89.1	93.3	1.047	77	1.21	93.3
1927	91.5	95.2	1.040	79	1.20	95.2
1928	93.0	95.8	1.030	80	1.20	95.8
1929	96.0	99.0	1.031	82	1.21	99.0
1930	97.2	100.2	1.031	84	1.19	100.2
1931	100.0	103.0	1.030	86	1.20	103.0
1932	100.8	103.8	1.030	86	1.21	103.8
1933	101.7	104.8	1.030	87	1.20	104.8
1934	98.5	101.6	1.031	85	1.19	101.6
1935	98.4	101.2	1.028	86	1.18	101.2
1936	100.1	102.4	1.023	87	1.18	102.4
1937	100.0	101.9	1.019	86	1.18	101.9
1938		105.8		89	1.19	105.8
1939		106.8		90	1.19	106.8
1940		109.4		92	1.19	109.4
1941		115.1		96	1.20	115.1
1942		118.5		100	1.18	118.5
1943		117.0		99	1.18	117.0
1944		117.0		101	1.16	117.0
1945		119.8		103	1.16	119.8
1946		117.7		102	1.15	117.7
1947		116.8		101	1.16	116.8
1948		112.7		98	1.15	112.7
1949		116.1		101	1.15	116.1
1950		116.6		101	1.15	116.6
1951		114.7		100	1.15	114.7
1952		114.7		100	1.14	114.7
1953		120.2		105	1.14	120.2
1954		122.1		107	1.14	122.1
1955		123.1		108	1.14	123.1
1956		125.5		110	1.14	125.5
1957		125.9		111	1.13	125.9

AO-37. BUTTER: Output

	Preferred series, production (million lb.)
	A
1870	412
1871	470
1872	434
1873	566
1874	585
1875	556
1876	677
1877	696
1878	726
1879	807
1880	816
1881	803
1882	743
1883	844
1884	869
1885	933
1886	989
1887	978
1888	978
1889	1292
1890	1171
1891	1091
1892	1058
1893	1047
1894	1063
1895	1297
1896	1604
1897	1533
1898	1473
1899	1493
1900	1540
1901	1575
1902	1401
1903	1485
1904	1540
1905	1667
1906	1545
1907	1537
1908	1763
1909	1622
1910	1706
1911	1762
1912	1592
1913	1608
1914	1685
1915	1751
1916	1793
1917	1644
1918	1503
1919	1647
1920	1574
1921	1748
1922	1870
1923	1993
1924	2066
1925	2082
1926	2132
1927	2188
1928	2120
1929	2184
1930	2149
1931	2239
1932	2307
1933	2375
1934	2286
1935	2211
1936	2168
1937	2135
1938	2252
1939	2210
1940	2240
1941	2268
1942	2130
1943	2015
1944	1818
1945	1699
1946	1502
1947	1640
1948	1504
1949	1688
1950	1648
1951	1443
1952	1402
1953	1607
1954	1628
1955	1549
1956	1559
1957	1559

AO-37, SOURCES

COL. A

1870-1908. Strauss & Bean, Table 40, production.

1909-54. *Consumption of Food*, Table 68, production.

1955-57. *The National Food Situation*, July 1958, Table 14.

AO-37, NOTES

Strauss & Bean and *Consumption of Food* give identical estimates for 1909-16. Thereafter (1917-37), Strauss & Bean's figures average about 3-4% lower than those of *Consumption of Food.*

Both series give estimates for total farm and factory production in actual weight terms for calendar years.

AO-38. CHEESE: Output

(million pounds)

	Vial, production	USDA, production	Col. B / Col. A	Preferred series, production
	A	B	C	D
1870	181			181
1871	164			164
1872	187			187
1873	212			212
1874	206			206
1875	233			233
1876	214			214
1877	235			235
1878	303			303
1879	243			243
1880	270			270
1881	304			304
1882	261			261
1883	281			281
1884	275			275
1885	260			260
1886	244			244
1887	268			268
1888	286			286
1889	301			301
1890	318			318
1891	293			293
1892	318			318
1893	254			254
1894	257			257
1895	234			234
1896	240			240
1897	311			311
1898	281			281
1899	299			299
1900	324			324
1901	362			362
1902	318			318
1903	323			323
1904	331			331
1905	327			327
1906	292			292
1907	286			286
1908	313			313
1909	321	313	.975	313
1910	365	355	.973	355
1911	357	345	.966	345
1912	337	323	.958	323
1913	375	359	.957	359
1914	386	367	.951	367
1915	457	440	.963	440
1916	437	422	.966	422
1917	486	472	.971	472
1918	406	415	1.02	415
1919	482	486	1.01	486
1920	437	423	.968	423
1921	428	434	1.01	434
1922	438	432	.986	432
1923	458	471	1.03	471
1924	472	474	1.00	474
1925	496	503	1.01	503
1926	475	468	.985	468
1927	449	462	1.03	462
1928	481	479	.996	479
1929	487	499	1.02	499
1930	500	510	1.02	510
1931	492	499	1.01	499
1932	484	491	1.01	491
1933	544	548	1.01	548
1934	579	587	1.01	587
1935	621	628	1.01	628
1936	643	650	1.01	650
1937	649	653	1.01	653
1938	725	726	1.00	726
1939		710		710
1940		785		785
1941		956		956
1942		1112		1112
1943		993		993
1944		1017		1017
1945		1117		1117
1946		1106		1106
1947		1183		1183
1948		1098		1098
1949		1199		1199
1950		1191		1191
1951		1161		1161
1952		1170		1170
1953		1344		1344
1954		1383		1383
1955		1367		1367
1956		1387		1387
1957		1407		1407

AO-38, SOURCES

Col. A, 1870-1938. E. E. Vial, *Production and Consumption of Manufactured Dairy Products* (USDA Technical Bulletin 722, April 1940), p. 32, total cheese production (except cottage, pot, and baker's).

Col. B

1909-54. *Consumption of Food,* Table 60, p. 73, total cheese production (except American full skim, cottage, pot, and baker's).

1955-57. *The National Food Situation,* July 1958, Table 14.

Col. C, Ratio, Col. B/Col. A.

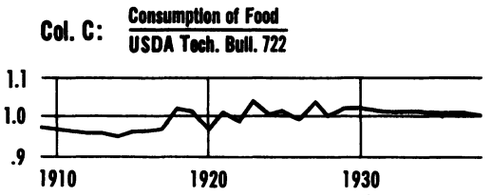
Col. D, Preferred series

1870-1908. Col. A, transcribed.

1909-57. Col. B, transcribed.

AO-38, NOTES

Col. C. The differences between the two series, illustrated by the chart, are partially due to the inclusion of American full skim cheese in Col. A and exclusion from Col. B. The reasons for the remaining differences, however, are not known, but they are insufficient to warrant adjustment in level. For the period 1909-19, factory production in both series is derived by interpolation, based upon market receipts, between Census estimates.



AO-39. WOOL: Output

(million pounds)

	Strauss & Bean, production	FAS, production	Col. B / Col. A	Col. A x 1.124	Preferred series, production	
					Greasy basis	Scoured basis
	A	B	C	D	E	F
1870	162			182	182	91
1871	160			180	180	90
1872	150			169	169	84
1873	158			178	178	89
1874	170			191	191	95
1875	181			203	203	101
1876	192			216	216	108
1877	200			225	225	112
1878	208			234	234	117
1879	211			237	237	118
1880	232			261	261	130
1881	240			270	270	135
1882	272			306	306	153
1883	290			326	326	163
1884	300			337	337	168
1885	308			346	346	173
1886	302			339	339	169
1887	285			320	320	160
1888	269			302	302	151
1889	265			298	298	149
1890	276			310	310	155
1891	285			320	320	160
1892	294			330	330	165
1893	349			392	392	196
1894	325			365	365	182
1895	294			330	330	165
1896	272			306	306	153
1897	259			291	291	145
1898	267			300	300	150
1899	272			306	306	153
1900	288			324	324	162
1901	303			341	341	170
1902	316			355	355	177
1903	287			323	323	161
1904	292			328	328	164
1905	295			332	332	166
1906	299			336	336	168
1907	298			335	335	167
1908	311			350	350	175
1909	316			355	355	177
1910	312	346	1.11	351	346	173
1911	308	343	1.11	346	343	171
1912	284	319	1.12	319	319	159
1913	272	309	1.14	306	309	154
1914	257	294	1.14	289	294	147
1915	248	281	1.13	279	281	140
1916	251	288	1.15	282	288	144
1917	244	277	1.14	274	277	138
1918	262	296	1.13	294	296	148
1919	279	318	1.14	314	318	159
1920	259	294	1.14	291	294	147
1921	251	290	1.16	282	290	145
1922	237	270	1.14	266	270	135
1923	239	273	1.14	269	273	136
1924	248	282	1.14	279	282	141
1925	264	300	1.14	297	300	150
1926	282	319	1.13	317	319	159
1927	303	340	1.12	341	340	170
1928	331	367	1.11	372	367	183
1929	345	382	1.11	388	382	191
1930	370	414	1.12	416	414	207
1931	396	442	1.12	445	442	221
1932	368	418	1.14	414	418	209
1933	391	438	1.12	439	438	219
1934	387	429	1.11	435	429	214
1935	380	428	1.13	427	428	214
1936	376	419	1.11	423	419	209
1937	383	422	1.10	430	422	211
1938		424			424	212
1939		426			426	213
1940		434			434	217
1941		453			453	226
1942		455			455	227
1943		444			444	222
1944		412			412	206
1945		378			378	189
1946		342			342	171
1947		308			308	154
1948		278			278	139
1949		248			248	124
1950		249			249	124
1951		254			254	127
1952		267			267	133
1953		274			274	137
1954		279			279	139
1955		276			276	138
1956		279			279	139
1957		269			269	134

AO-39, SOURCES

Col. A, Strauss & Bean, Table 47, p. 105, production, calendar years.

Col. B

1910-46. FAS Stat. Bull. 179, Table 260, p. 229.

1947-57. *Ag. Stat. 1958*, p. 345.

Col. C, Ratio, Col. B/Col. A.

Col. D, Col. A times the average of the ratios found in Col. C for 1910-14 (ratio 1.124).

Col. E, Preferred series, greasy basis

1870-1909. Col. D, transcribed.

1910-57. Col. B, transcribed.

Col. F, Preferred series, scoured basis. Col. E times 0.50.

AO-39, NOTES

Col. E. The Strauss & Bean series (Col. A) has been raised 12.4% to match the FAS series (Col. B). The production of pulled wool, included in the FAS series, is 10-15% of total production. When pulled wool is deducted from the FAS series, the FAS series is 2-3% less than the Strauss & Bean series. There is no readily available explanation for this difference.

Col. F. This factor is estimated by use of conversion factors given in *Ag. Stat. 1942*, p. 8, and *Ag. Stat. 1959*, p. VIII. The former gives for shorn wool 1 lb. scoured as equivalent to 2 lb. greasy; the latter gives 1 lb. greasy equivalent to .44 lb. scoured. Both give for pulled wool 1 lb. greasy equivalent to .75 lb. scoured. If 10% of wool output is pulled, the 1942 factors average to .525, the 1959 factors to .471.

Agriculture:
Consumption and Foreign Trade (AC)

AC-1. AGRICULTURE: Net Imports

(billion dollars)

	Exports	Supplementary imports	Complementary imports	Preferred series, supplementary net imports			Preferred series, net imports		
		(1954 prices)		1902 prices	1929 prices	1954 prices	1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G	H	I
1870	1.07	.104	.21	-.21	-.44	-.97	-.18	-.34	-.75
1871	.92	.143	.29	-.16	-.35	-.78	-.12	-.23	-.49
1872	1.16	.143	.26	-.23	-.46	-1.02	-.18	-.35	-.76
1873	1.49	.143	.22	-.31	-.62	-1.35	-.27	-.53	-1.13
1874	1.29	.143	.23	-.25	-.52	-1.15	-.21	-.41	-.92
1875	1.41	.104	.24	-.29	-.60	-1.31	-.25	-.49	-1.07
1876	1.47	.130	.25	-.30	-.62	-1.34	-.26	-.51	-1.09
1877	1.82	.130	.26	-.40	-.79	-1.69	-.36	-.69	-1.43
1878	2.11	.143	.23	-.47	-.93	-1.97	-.42	-.81	-1.74
1879	2.40	.169	.34	-.56	-1.06	-2.23	-.50	-.90	-1.89
1880	2.57	.156	.34	-.60	-1.15	-2.41	-.53	-1.00	-2.07
1881	1.99	.169	.34	-.44	-.86	-1.82	-.37	-.71	-1.48
1882	2.18	.182	.35	-.47	-.93	-2.00	-.40	-.76	-1.65
1883	1.78	.221	.38	-.35	-.72	-1.56	-.28	-.55	-1.18
1884	1.95	.221	.40	-.41	-.81	-1.73	-.33	-.63	-1.33
1885	2.01	.234	.45	-.40	-.82	-1.78	-.31	-.62	-1.33
1886	2.16	.247	.46	-.43	-.88	-1.91	-.34	-.68	-1.45
1887	2.07	.221	.44	-.41	-.86	-1.85	-.32	-.68	-1.41
1888	2.07	.234	.39	-.42	-.87	-1.84	-.33	-.66	-1.45
1889	2.35	.234	.47	-.49	-1.01	-2.12	-.39	-.81	-1.65
1890	2.63	.273	.44	-.53	-1.11	-2.36	-.44	-.91	-1.92
1891	3.09	.299	.46	-.66	-1.33	-2.79	-.55	-1.09	-2.33
1892	2.59	.325	.56	-.53	-1.07	-2.27	-.41	-.84	-1.71
1893	2.61	.312	.43	-.52	-1.08	-2.30	-.42	-.88	-1.87
1894	2.94	.377	.51	-.57	-1.21	-2.56	-.46	-.96	-2.05
1895	2.56	.455	.55	-.48	-.98	-2.11	-.36	-.74	-1.56
1896	3.15	.585	.53	-.58	-1.18	-2.57	-.47	-.91	-2.04
1897	3.79	.273	.58	-.85	-1.70	-3.52	-.72	-1.40	-2.94
1898	3.89	.325	.64	-.85	-1.70	-3.57	-.70	-1.42	-2.93
1899	3.51	.377	.66	-.74	-1.49	-3.13	-.59	-1.19	-2.47
1900	3.58	.403	.60	-.74	-1.51	-3.18	-.59	-1.22	-2.58
1901	3.39	.403	.66	-.69	-1.41	-2.99	-.53	-1.05	-2.33
1902	3.35	.455	.85	-.65	-1.36	-2.90	-.46	-1.01	-2.05
1903	2.85	.390	.75	-.68	-1.15	-2.46	-.50	-.77	-1.71
1904	3.34	.468	.82	-.62	-1.36	-2.87	-.41	-.95	-2.05
1905	3.25	.481	.81	-.61	-1.31	-2.77	-.41	-.97	-1.96
1906	3.71	.533	.74	-.71	-1.50	-3.18	-.51	-1.11	-2.44
1907	3.25	.429	.77	-.63	-1.31	-2.82	-.43	-.97	-2.05
1908	3.25	.585	.80	-.57	-1.23	-2.67	-.34	-.79	-1.87
1909	2.48	.559	.91	-.39	-.86	-1.92	-.13	-.45	-1.01
1910	2.76	.572	.75	-.44	-.99	-2.19	-.20	-.60	-1.44
1911	3.51	.559	.79	-.62	-1.36	-2.95	-.36	-.95	-2.16
1912	3.27	.637	.90	-.54	-1.18	-2.63	-.25	-.71	-1.73
1913	3.30	.663	.83	-.53	-1.17	-2.64	-.25	-.72	-1.81
1914	3.62	.910	.90	-.58	-1.19	-2.71	-.28	-.72	-1.81
1915	3.29	.936	1.06	-.50	-1.02	-2.35	-.11	-.45	-1.29
1916	3.04	.949	1.07	-.43	-.87	-2.09	-.01	-.30	-1.02
1917	2.46	.962	1.19	-.27	-.61	-1.50	+.21	+.02	-.31
1918	4.04	1.17	1.09	-.61	-1.23	-2.87	-.13	-.62	-1.78
1919	4.07	1.25	1.31	-.56	-1.14	-2.82	+.05	-.41	-1.51
1920	3.75	1.04	1.12	-.56	-1.15	-2.71	-.13	-.56	-1.59
1921	3.59	.871	1.29	-.60	-1.19	-2.72	-.03	-.48	-1.43
1922	2.85	1.13	1.43	-.29	-.66	-1.72	+.41	+.13	-.29
1923	3.04	1.03	1.45	-.34	-.79	-2.01	+.31	+.01	-.56
1924	3.56	.962	1.52	-.50	-1.09	-2.60	+.22	-.26	-1.08
1925	3.09	1.10	1.58	-.30	-.77	-1.99	+.53	+.15	-.41
1926	4.00	1.20	1.67	-.49	-1.19	-2.80	+.35	-.23	-1.13
1927	3.12	1.16	1.69	-.30	-.77	-1.96	+.58	+.22	-.27
1928	3.26	1.18	1.82	-.33	-.83	-2.08	+.68	+.23	-.26
1929	2.92	1.29	1.86	-.18	-.58	-1.63	+.84	+.53	+.23
1930	2.76	1.07	1.72	-.22	-.63	-1.69	+.68	+.37	+.03
1931	3.06	.923	1.87	-.34	-.90	-2.14	+.62	+.18	-.27
1932	2.65	.819	1.56	-.27	-.77	-1.83	+.50	+.14	-.27
1933	2.48	.936	1.78	-.17	-.61	-1.54	+.79	+.39	+.22
1934	1.69	.884	1.59	-.02	-.25	-.81	+.78	+.62	+.78
1935	1.90	1.08	1.91	+.02	-.25	-.82	+.93	+.78	+1.09
1936	1.74	1.20	1.89	+.08	-.11	-.54	+1.00	+.90	+1.35
1937	2.39	1.35	1.98	-.03	-.34	-1.04	+1.00	+.71	+.94
1938	1.72	1.07	1.83	+.02	-.15	-.65	+.82	+.80	+1.18
1939	2.16	1.14	2.02	-.07	-.35	-1.02	+.85	+.68	+1.00
1940	.73	1.17	2.24	+.26	+.37	+.44	+1.48	+1.50	+2.68
1941	1.03	1.65	2.47	+.33	+.53	+.62	+1.71	+1.72	+3.09
1942	1.50	1.29	1.29	+.02	+.09	-.21	+.46	+.63	+1.08
1943	2.09	1.31	1.49	-.11	-.16	-.78	+.19	+.42	+.71
1944	2.27	1.31	1.79	-.13	-.25	-.96	+.26	+.45	+.83
1945	3.02	1.36	1.90	-.32	-.61	-1.66	+.12	+.14	+.23
1946	3.25	1.42	2.14	-.37	-.73	-1.83	+.35	+.20	+.31
1947	2.48	1.38	2.19	-.17	-.35	-1.10	+.82	+.60	+1.09
1948	3.47	1.44	2.42	-.41	-.85	-2.03	+.64	+.21	+.39
1949	3.23	1.27	2.41	-.36	-.80	-1.96	+.62	+.24	+.45
1950	3.12	1.53	2.35	-.27	-.63	-1.59	+.85	+.43	+.76
1951	3.71	1.43	2.33	-.46	-.94	-2.28	+.59	+.09	+.05
1952	2.79	1.39	2.41	-.25	-.51	-1.40	+.88	+.58	+1.01
1953	2.57	1.35	2.37	-.18	-.45	-1.22	+.80	+.59	+1.16
1954	2.67	1.24	2.04	-.24	-.60	-1.43	+.65	+.30	+.61
1955	3.05	1.30	2.26	-.36	-.79	-1.75	+.60	+.21	+.51
1956	5.13	1.24	2.42	-.91	-1.91	-3.89	+.02	-.86	-1.47
1957	4.04	1.30	2.31	-.58	-1.30	-2.74	+.30	-.31	-.43

AC-1, SOURCES

Computation of Net Imports in 1954 Prices:

COL. A, Exports. Table AC-4, Col. O, times 1.32.

COL. B, Supplementary imports. Table AC-3, Col. L, times 1.30.

COL. C, Complementary imports. Table AC-2, Col. J, transcribed.

COLS. D and E, Preferred series, supplementary net imports, 1902 and 1929 prices. Computed exactly as Col. F, except that 1902- and 1929-weighted series were used in the computation.

COL. F, Preferred series, supplementary net imports, 1954 prices. Col. B minus Col. A.

COLS. G and H, Preferred series, net agricultural imports, 1902 and 1929 prices. Computed exactly as Col. I, except that 1902- and 1929-weighted series were used in the computation.

COL. I, Preferred series, net agricultural imports, 1954 prices. Col. B plus Col. C minus Col. A.

AC-1, NOTES

Our export and import indexes (Tables AC-4, AC-3, and AC-2) do not cover all agricultural commodities in foreign trade. While this does not seriously affect the relative movements of the series, it does affect combining the indexes to obtain net trade and consumption. The factors applied to the indexes in this table are designed to supply the missing values.

The value of the missing commodities cannot be readily determined because of differences in concept between our index and the values reported by the Department of Commerce. First, we have attempted to obtain farm prices as our weights rather than export and import average unit values, which refer to commodities at a semiprocessed stage. Second, we have attempted to define foreign trade as that which enters or leaves the continental United States and not the Territories.

The Agricultural Marketing Service, in its *Supply and Utilization of Farm Commodities* (Agricultural Handbook No. 91, Nov. 1955, pp. 99, 104, and 112, and 1956 Supplement (Oct. 1957), pp. 38, 43, and 51) has series that use the same basic concepts as ours; we have used these series as a basis for estimating our lack of coverage. Certain differences required adjustments, however: Agricultural Marketing Service excluded silk and rubber imports and generally included farm weight equivalent of trade in finished commodities (such as textiles), while we have generally restricted our estimates to trade in raw materials.

EXPORTS

The Agricultural Marketing Service series are given in terms of trade in 1947-49 prices, while our series are based on 1954 prices. We have adjusted our series to the same base by using a simple average of the 1947-49 prices for the commodities included in our indexes. These were multiplied by the quantities exported for all years 1947 through 1949 and the annual averages compared with the figures given in the 1956 Supplement to the AMS Handbook, as follows:

	Average annual value of exports, 1947-49 (millions of dollars)		
	AMS	Potter-Christy	Ratio, AMS/P-C
Cotton	$ 671	$ 658	1.02
Grains	1264	1075	1.18
Meat animals	185	78	2.38
Tobacco	277	229	1.21
All other	677	179	3.78
Total	$3074	$2219	1.39

The AMS data refer to calendar years. Our data are generally for crop years, and consequently some differences are due to time coverage rather than commodity coverage. The small differences in cotton are due to the inclusion by the AMS of farm value of cotton manufactures (Agricultural Handbook 91, p. 31).

The difference in the grains, amounting to about $190 million per year, is due to the fact that barley, sorghum, oats, and other grains are included by the AMS and not by us.

The differences in the tobacco figures are due to the inclusion by AMS of the farm value of tobacco in manufactures exported (*ibid.*).

The differences for meat animals are large. Our figure compares with AMS exports of beef and pork of $68 million. Of the $117 million difference, $93 million is for tallow, oleo, and lard, which we have given separately (though valued at lower prices). The balance of $24 million is for commodities not covered by our index: veal, mutton, lamb, hides and skins.

The following adjustments have been made in our 1954 values to take care of undercoverage:

a. Cotton—no change because the difference is due to inclusion of processed material by AMS.
b. Tobacco—ditto.
c. Grains—increase by 18% for barley, sorghums, etc.
d. Meat animals—increase by 30% ($24 mil./$78 mil. = .31) for hides, skins, veal, etc.
e. All other—adjusted value taken as $677 million to account for the many minor commodities not included in our index.

On this basis the 1947-49 average values of the exported commodities have been adjusted as follows:

	Old values	*New values*
Cotton	$ 658	$ 658
Grains	1075	1264
Meat animals	78	102
Tobacco	229	229
All other	179	677
Total	$2219	$2930

The new total, adjusted for undercoverage, is 32% higher than the old for 1947-49. If we assume that the same relationship held true for 1954, then the agricultural export index, in 1954 dollars, must be increased by 32% to allow for uncovered items and permit combination with the import and production indexes. The same assumption was made for 1902 and 1929, and these series were likewise increased by 32%.

SUPPLEMENTARY IMPORTS

Our value of supplementary agricultural imports in 1947-49 prices is less than that reported by the AMS Handbook for the years 1947-49:

	AMS	*Potter-Christy*
	(millions of dollars)	
Sugar	$ 392	$ 431
Apparel wool	202	230
Cattle and calves	90	127
All other	598	275
Total	$1282	$1063

The slight differences between the values for the specific commodities may be partially due to differences between crop years and calendar years. No investigation was made of the remaining differences. The adjustment factor was derived by summing the values of sugar, wool, and beef as given by our tables and the value of "all other" as given by the AMS to obtain a total value for agricultural supplementary imports of $1386 million. This is 30% above our total of $1063; on the assumption that the same relationship existed in 1902, 1929, and in 1954, the value of our supplementary imports series

(Continued on next page)

AC-2. AGRICULTURE: Complementary Imports

(billion dollars; 1954 prices except as noted)

	Cocoa	Coffee	Silk	Tea	Carpet wool	Rubber	Bananas	All complementary imports		
								1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I	J
1870	.001	.123	.003	.024	.041	.003		.035	.10	.21
1871	.002	.166	.003	.030	.073	.004		.044	.11	.29
1872	.002	.157	.004	.030	.051	.004		.048	.11	.26
1873	.001	.152	.002	.026	.026	.004		.044	.09	.22
1874	.002	.149	.003	.030	.033	.004		.041	.11	.23
1875	.002	.165	.004	.029	.027	.003		.044	.11	.24
1876	.002	.175	.004	.027	.025	.004		.045	.10	.25
1877	.002	.171	.004	.031	.029	.004		.044	.10	.26
1878	.002	.157	.006	.028	.023	.005		.046	.12	.23
1879	.002	.192	.008	.034	.077	.005		.056	.16	.34
1880	.003	.233	.009	.038	.033	.006		.071	.14	.34
1881	.004	.224	.011	.037	.041	.007		.068	.15	.34
1882	.003	.231	.014	.034	.042	.007		.072	.17	.35
1883	.004	.254	.013	.032	.044	.003		.074	.17	.38
1884	.003	.270	.013	.034	.047	.007		.077	.18	.40
1885	.004	.286	.021	.038	.068	.009		.092	.20	.45
1886	.004	.285	.019	.042	.072	.009		.093	.19	.46
1887	.005	.265	.019	.040	.071	.011		.095	.18	.44
1888	.006	.217	.020	.037	.076	.010		.087	.21	.39
1889	.006	.297	.023	.039	.068	.010		.10	.20	.47
1890	.007	.260	.019	.039	.076	.010		.09	.20	.44
1891	.007	.271	.026	.042	.078	.012		.11	.24	.46
1892	.008	.334	.026	.042	.103	.013		.12	.23	.56
1893	.006	.292	.018	.044	.036	.010		.10	.20	.43
1894	.010	.290	.029	.046	.089	.012		.11	.25	.51
1895	.008	.341	.029	.044	.082	.012		.12	.23	.55
1896	.010	.304	.024	.053	.094	.011		.11	.27	.53
1897	.009	.384	.037	.034	.070	.014		.13	.30	.58
1898	.012	.451	.035	.035	.052	.018		.15	.28	.64
1899	.014	.425	.040	.040	.089	.018		.15	.30	.66
1900	.015	.397	.032	.042	.057	.020		.15	.29	.60
1901	.017	.430	.043	.035	.079	.021		.16	.36	.66
1902	.021	.560	.046	.051	.101	.021		.19	.35	.85
1903	.024	.463	.051	.053	.097	.022		.18	.38	.75
1904	.025	.511	.068	.048	.095	.026		.21	.41	.82
1905	.027	.535	.053	.044	.084	.024		.20	.34	.81
1906	.031	.442	.057	.041	.093	.032		.20	.39	.74
1907	.028	.517	.051	.044	.056	.026	.044	.20	.34	.77
1908	.043	.464	.077	.054	.086	.035	.044	.23	.44	.80
1909	.040	.550	.072	.048	.101	.047	.046	.26	.41	.91
1910	.038	.424	.081	.045	.064	.044	.054	.24	.39	.75
1911	.044	.423	.081	.048	.085	.053	.054	.26	.41	.79
1912	.050	.498	.098	.046	.105	.052	.050	.29	.47	.90
1913	.051	.450	.106	.041	.073	.049	.056	.28	.45	.83
1914	.056	.520	.095	.044	.071	.059	.056	.30	.47	.90
1915	.063	.605	.128	.048	.078	.092	.046	.39	.57	1.06
1916	.078	.602	.123	.049	.064	.111	.042	.42	.57	1.07
1917	.126	.646	.132	.059	.061	.126	.042	.48	.63	1.19
1918	.114	.541	.149	.059	.058	.128	.039	.48	.61	1.09
1919	.116	.666	.169	.030	.081	.200	.044	.61	.72	1.31
1920	.105	.663	.121	.041	.029	.112	.047	.43	.59	1.12
1921	.092	.694	.160	.035	.082	.175	.052	.57	.71	1.29
1922	.111	.648	.178	.044	.145	.245	.054	.70	.79	1.43
1923	.135	.737	.189	.048	.102	.192	.053	.65	.80	1.45
1924	.123	.741	.185	.043	.118	.250	.056	.72	.83	1.52
1925	.123	.675	.234	.047	.141	.292	.066	.83	.92	1.58
1926	.140	.787	.237	.045	.097	.301	.067	.86	.96	1.67
1927	.140	.758	.263	.041	.121	.291	.073	.88	.99	1.69
1928	.123	.769	.269	.042	.125	.379	.077	1.01	1.06	1.82
1929	.167	.784	.299	.041	.147	.351	.075	1.02	1.11	1.86
1930	.123	.843	.250	.039	.076	.318	.071	.90	1.00	1.72
1931	.137	.921	.273	.040	.096	.333	.065	.96	1.08	1.87
1932	.159	.790	.237	.044	.033	.239	.059	.77	.91	1.56
1933	.157	.837	.223	.045	.096	.370	.049	.96	1.00	1.78
1934	.145	.806	.185	.035	.066	.298	.058	.80	.87	1.59
1935	.200	.929	.221	.040	.133	.317	.068	.91	1.03	1.91
1936	.203	.922	.206	.038	.120	.331	.072	.92	1.01	1.89
1937	.200	.900	.196	.044	.145	.407	.083	1.03	1.05	1.98
1938	.148	1.052	.174	.038	.060	.279	.075	.80	.95	1.83
1939	.215	1.064	.169	.045	.122	.339	.069	.92	1.03	2.02
1940	.227	1.087	.145	.045	.113	.555	.064	1.22	1.13	2.24
1941	.219	1.196	.078	.048	.171	.699	.062	1.38	1.19	2.47
1942	.075	.912	.001	.023	.060	.191	.030	.44	.54	1.29
1943	.194	1.162	*	.039	.028	.041	.026	.30	.57	1.49
1944	.227	1.380	*	.042	.029	.077	.034	.39	.70	1.79
1945	.213	1.433	.005	.039	.067	.101	.045	.44	.75	1.90
1946	.202	1.421	.048	.043	.106	.261	.058	.72	.92	2.14
1947	.199	1.302	.010	.029	.094	.483	.069	.99	.95	2.19
1948	.187	1.461	.023	.042	.135	.499	.076	1.05	1.06	2.42
1949	.218	1.541	.012	.044	.073	.448	.073	.98	1.04	2.41
1950	.225	1.288	.032	.054	.139	.545	.070	1.12	1.06	2.35
1951	.216	1.417	.022	.040	.072	.498	.068	1.05	1.03	2.33
1952	.208	1.415	.038	.044	.088	.547	.070	1.13	1.09	2.41
1953	.223	1.470	.023	.051	.084	.440	.082	.98	1.03	2.37
1954	.225	1.189	.025	.053	.064	.406	.078	.89	.90	2.04
1955	.224	1.363	.034	.049	.084	.432	.078	.96	1.00	2.26
1956	.245	1.476	.039	.046	.162	.393	.056	.93	1.05	2.42
1957	.227	1.444	.025	.047	.136	.375	.057	.88	.99	2.31

was raised by 30% to account for commodities not included in the index.

COMPLEMENTARY IMPORTS

The commodities included in our index of complementary agricultural imports are coffee, cocoa, tea, carpet wool, bananas, rubber, and silk. These make up more than 90% of all complementary agricultural imports and it is felt that no adjustment for undercoverage is necessary. The prices used to weight the complementary imports are conceptually different from those used to weight supplementary imports and exports, since they include cost, insurance, and freight to domestic ports and arrive at a stage of higher processing, generally speaking, than that of the farm level. They are exotic commodities, however, and the price used reflects the price for each commodity at the stage at which it first becomes available to the economy.

AC-2, SOURCES

1950-54 Price Weights:

COL. A, Cocoa. Quantity times 1950-54 price, $.333/lb.
Quantity:
1870-1908. *Stat. Abstracts (1916,* p. 402; *1911,* p. 426; etc.), import tables, cocoa and cocoa beans imports.
1909-55. *Consumption of Food.* Table 98, cocoa beans, imports.
1956-57. *The National Food Situation,* July 1958, p. 78.
Price: See notes, below.

COL. B, Coffee. Quantity times 1950-54 price, $.53/lb.
Quantity:
1870-1909. Table AC-24, Col. B, changed to years beginning July 1.
1910-55. *Consumption of Food,* Table 96, coffee imports.
1956-57. *The National Food Situation,* p. 78.
Price: Table AP-41, Col. A, average of 1950-54.

COL. C, Silk. Quantity times 1950-54 price, $3.05/lb.
Quantity:
1870-91. Years beginning July 1, from *Stat. Abstract 1916,* p. 718.
1892-1946. Barkley Meadows, *Trends in the Consumption of Fibers in the U.S., 1892-1948,* Tables 33 and 34 (USDA Statistical Bulletin 89, Dec. 1950).
1947-55. *Bus. Stat. 1957,* p. 191.
1956-57. *Survey Cur. Bus.,* Feb. 1958 and April 1958, p. S-39.
Price: See notes.

COL. D, Tea. Quantity times 1950-54 price, $.469/lb.
Quantity:
1870-1908. *Stat. Abstract 1921,* p. 874, tea imports, changed to years beginning July 1.
1909-55. *Consumption of Food,* Table 97.
1956-57. *The National Food Situation,* p. 78.
Price: 1950-54 average of average unit values of imports.

COL. E, Carpet wool. Quantity times 1950-54 price, $.84/lb.
Quantity:
1870-82. Years beginning July 1, *Stat. Abstract 1878,* p. 76, and *1887,* p. 90, total unmanufactured wool imports times .711 (the average of the ratios of carpet wool to total wool for 1883-92).
1883-1909. Years beginning July 1, *Stat. Abstract 1887,* p. 90; *1897,* p. 201; *1905,* p. 301; *1911,* p. 450: unmanufactured wool imports, Class 3 (carpet).
1910-55. FAS Stat. Bull. 179, Table 260.
1956-57. USDA, FAS, *Foreign Agricultural Trade,* 1956, p. 45, and 1957, p. 50.
Price: Average value from Bureau of the Census, Reports no. FT-110, *U.S. Imports of Merchandise for Consumption,* commodity code no. 3501001, described in 1950 as "Carpet wool, greasy, free," in 1951-54 as "Not Merino, in the grease, duty free."

COL. F, Rubber. Quantity times 1950-54 price, $.303/lb.
Quantity: Table AC-26.
Price: *Stat. Abstract 1954,* Table 378, and *1956,* Table 400, the 1950-54 average of average unit values of crude rubber imported.

COL. G, Bananas. Quantity times 1950-54 average price, $1.20/bunch.
Quantity:
1907-28. Years beginning July 1, *Stat. Abstract 1916,* p. 410; *1921,* p. 499; *1925,* p. 472; *1929,* p. 557.
1929-55. *Ag. Stat. 1952,* Table 235, and *1956,* Table 223.
1956-57. USDA, FAS, *Foreign Agricultural Trade,* 1956, p. 48, and 1957, p. 53.
Price: *Stat. Abstract 1954,* Table 378, and *1956,* Table 400, the 1950-54 average of average unit values of bananas imported.

COLS. H and I, Quantity indicator, all complementary imports, 1902 and 1929 weights. Computed exactly as Col. J, except that 1902 and 1929 prices were used as weights. (For weights, see notes, below.)

COL. J
1870-1906. Sum of Cols. A-F raised by the ratio of the sum of Cols. A-G to the sum of Cols. A-F for 1907 (1.061).
1907-57. Sum of Cols. A-G.

AC-2, NOTES

* Less than $500,000.

COL. A. The figures for 1870-1908 are for years beginning July 1; thereafter, for calendar years. The price weight is the 1950-54 average of average unit values of imported "cocoa or cacao beans, and shells of" as reported by the Bureau of the Census. The average unit values represent values in foreign markets.

COL. B. The figures are for years beginning July 1 for 1870-1908 and calendar years thereafter.

COL. C. The figures represent imports of raw silk (including wild and tussah silk) and silk waste (including cocoons and noils not exceeding 2 inches in length). The price weight is an average of the average unit values of silk and silk waste imports for 1950-54 (*Stat. Abstract 1955,* Table 846).

COL. D. For 1870-1908 the figures are for years beginning July 1, thereafter for calendar years. The price weight has been derived from values of imports and quantities that are identical with the series in *Consumption of Food.*

COL. E. The figures are reported in terms of "actual weight" and are given for years beginning July 1 for 1870-1909 and calendar years thereafter. They are general imports through 1909, general imports less re-exports for 1910-32, and imports for consumption thereafter.

COL. F. The price weight is the 1950-54 average of average unit values of imports of crude rubber, latex, jelutong, etc.

COLS. H and I. The weights used in the computation of the 1902- and 1929-weighted indicators are as follows:

Commodity	*1902 price weights*	*1929 price weights*
A Cocoa	$.123/lb.	$.098/lb.
B Coffee	.065/lb.	.204/lb.
C Silk	3.00/lb.	4.41/lb.
D Tea	.144/lb.	.29/lb.
E Carpet wool	.0985/lb.	.269/lb.
F Rubber	.447/lb.	.188/lb.
G Bananas	.26/bunch	.554/bunch

AC-3. AGRICULTURE: Supplementary Imports

(million dollars; 1954 prices except as noted)

	Sugar	Tobacco	Cotton	Vegtable fats & oils	Olive oil	Oil seeds	Hogs & products	Cattle & products	Wool	All supplementary imports		
										1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G	H	I	J	K	L
1870	50	5	1					6	12	34	52	80
1871	59	6	1					3	22	41	67	110
1872	62	6	2					4	15	41	67	110
1873	67	6	1					5	8	41	65	110
1874	71	4	1					5	10	43	69	110
1875	58	4	1					3	8	36	58	80
1876	65	4	1					3	8	39	63	100
1877	60	5	1					4	9	37	61	100
1878	72	4	1					5	7	43	68	110
1879	72	6	1					5	23	49	81	130
1880	76	4	2					4	10	46	76	120
1881	78	7	2					7	12	49	80	130
1882	84	9	2					11	13	54	89	140
1883	108	8	3					10	14	67	109	170
1884	107	7	2					11	8	65	104	170
1885	105	9	2					8	26	69	113	180
1886	123	10	2					9	15	76	124	190
1887	106	11	2					7	15	66	108	170
1888	108	12	3					6	19	69	111	180
1889	114	17	3					3	13	70	113	180
1890	136	14	8					1	21	84	137	210
1891	140	13	10					*	30	89	145	230
1892	147	16	15					*	27	94	153	250
1893	170	11	10					*	6	97	153	240
1894	140	15	17					15	54	106	178	290
1895	153	19	19					23	71	121	207	350
1896	193	8	20					34	127	164	281	450
1897	105	6	17					30	26	81	137	210
1898	156	8	18					21	8	99	160	250
1899	158	11	24				*	20	27	108	179	290
1900	188	16	18				*	17	19	120	195	310
1901	154	17	34				*	13	38	112	187	310
1902	205	20	25				*	8	31	133	215	350
1903	184	18	17				*	4	31	118	192	300
1904	187	19	22				*	3	73	134	223	360
1905	201	24	24				*	3	54	137	226	370
1906	220	24	38				*	4	50	150	247	410
1907	193	20	26				*	7	31	126	206	330
1908	223	25	30				*	12	88	165	276	450
1909	210	27	29				*	17	76	156	261	430
1910	227	28	41				*	20	50	161	269	440
1911	232	32	39				*	26	27	158	261	430
1912	241	39	42	32	9	27	*	39	59	174	299	490
1913	258	35	46	35	8	21	*	79	33	182	318	510
1914	284	27	67	31	11	30	11	154	88	238	429	700
1915	280	28	77	27	10	48	2	83	164	243	433	720
1916	298	28	52	50	12	48	*	50	194	256	445	730
1917	279	50	39	76	11	57	1	50	182	261	442	740
1918	273	49	35	119	*	70	2	148	201	310	531	900
1919	348	55	123	109	13	60	2	76	179	334	572	960
1920	379	34	40	83	7	83	1	64	110	299	490	800
1921	311	38	64	49	12	48	*	28	116	238	405	670
1922	453	44	83	76	13	64	*	33	101	321	532	870
1923	368	32	51	76	16	93	1	22	129	298	481	790
1924	411	45	55	68	16	70	3	25	50	285	462	740
1925	454	41	57	85	19	77	3	24	92	326	528	850
1926	458	54	70	90	17	99	5	38	90	348	561	920
1927	438	47	59	92	15	99	8	80	58	340	549	890
1928	429	46	80	97	18	94	5	96	46	342	554	910
1929	453	37	67	138	19	117	3	105	53	384	606	990
1930	437	44	19	120	20	88	1	54	37	327	508	820
1931	391	43	23	109	15	82	2	21	23	285	438	710
1932	376	35	23	86	16	64	2	25	7	255	396	630
1933	362	32	26	117	14	97	1	34	32	289	440	720
1934	392	34	19	98	12	75	1	38	16	275	425	680
1935	359	39	27	183	15	92	4	90	22	332	505	830
1936	382	40	45	173	13	86	17	104	59	354	552	920
1937	405	39	28	205	10	135	31	112	80	408	623	1040
1938	383	44	26	130	15	94	22	95	16	322	500	820
1939	380	47	30	121	13	96	17	130	52	335	538	880
1940	381	45	34	106	11	106	2	101	119	338	548	900
1941	459	41	47	116	2	132	5	137	326	447	760	1270
1942	278	47	30	35	1	67	*	119	416	315	589	990
1943	387	41	24	38	1	68	3	103	342	338	610	1010
1944	430	45	32	46	*	68	*	82	310	346	617	1010
1945	382	44	59	44	2	59	1	77	386	346	631	1050
1946	329	54	48	28	3	92	*	48	492	352	646	1090
1947	473	44	51	48	2	133	*	26	281	380	645	1060
1948	396	51	29	50	8	101	*	157	317	377	668	1110
1949	447	50	43	41	4	94	1	120	185	347	604	980
1950	467	55	32	57	17	97	13	149	293	409	718	1180
1951	442	61	13	54	9	86	19	169	250	380	670	1100
1952	463	61	33	47	10	63	27	140	234	369	656	1070
1953	481	61	24	54	10	61	63	98	186	364	628	1040
1954	463	64	25	51	13	63	70	77	121	338	574	950
1955	485	67	23	55	11	62	67	93	136	355	606	1000
1956	510	71	23	55	10	59	58	73	87	342	577	950
1957	488	73	24	56	10	56	55	177	65	354	613	1000

AC-3, SOURCES

Computation of Index in 1954 Prices:

COL. A, Sugar. Quantity times 1954 price, $78.4/ton.
Quantity:
1870-1908. Table AC-9, Col. D.
1909-57. Table AC-9, Col. A.
Price: See notes, below.

COL. B, Tobacco. Quantity times 1954 price, $.58/lb.
Quantity:
1870-1949. *Ag. Stat. 1952,* Table 149, tobacco imports.
1950-55. *Ag. Stat. 1956,* Table 139.
1956-57. USDA, *Foreign Agricultural Trade,* fiscal year 1957-58, Dec. 1958, p. 49.
Price: Table AP-19, Col. J, times 1.135 to obtain price per pound of declared weight.

COL. C, Cotton. Quantity times 1954 price, $168/bale.
Quantity: Table AC-12, Col. D.
Price: Table AP-20, Col. G, farm price for cotton of $.336/lb., changed to $168/bale.

COL. D, Vegetable fats and oils. Quantity times 1954 price, $.133/lb.
Quantity: Antoine Banna, *Oilseeds, Fats and Oils, and Their Products, 1909-1953,* AMS Statistical Bulletin 147, 1954 (brought up to 1957 by the U.S. Department of Agriculture), Table 75, total vegetable fats and oils, minus edible olive oil imports.
Price: See notes, below.

COL. E, Olive oil. Quantity times 1954 price, $.213/lb.
Quantity: Banna, *loc. cit.,* edible olive oil imports.
Price: See notes.

COL. F, Oil seeds. Quantity times 1954 price, $.133/lb.
Quantity: Banna, *loc. cit.,* total oil equivalent of oil seeds imports.
Price: See notes.

COL. G, Hogs and hog products. Quantity times 1954 price, $.382/lb.
Quantity: Table AC-15, Col. I, in dressed weight equivalent.
Price: Table AP-28, Col. D, $.216/lb. live weight, converted to $.382/lb. dressed weight.

COL. H, Cattle and cattle products. Quantity times 1954 price, $.293/lb.
Quantity: Table AC-17, Col. G.
Price: Table AP-29, Col. D, $.16/lb. live weight, converted to $.293/lb. dressed weight.

COL. I, Wool. Quantity times 1954 price, $.532/lb.
Quantity:
1870-83. An approximation was used, taking ⅓ of total wool imports, as no breakdown was published. This ratio is based on the 1884-93 relationships in the published figures.
1884-1909. *Stat. Abstracts,* tables of merchandise imported into the United States, unmanufactured class 1, clothing wool, plus unmanufactured class 2, combing wool.
1910-55. FAS Stat. Bull. 179, Table 260, imports of apparel wool.
1956-57. USDA, *Foreign Agricultural Trade,* 1956, p. 45, and 1957, p. 50.
Price: Table AP-39, Col. E.

COLS. J and K, Agricultural supplementary imports, 1902 and 1929 prices. Computed exactly as Col. L, except that 1902 and 1929 prices were used as weights for the various commodities. (For weights, see notes, below.)

COL. L, Agricultural supplementary imports, 1954 prices. Sum of Cols. A through I (linked for missing series in earlier years).

AC-3, NOTES

* Less than $500,000.

COL. A. The quantity figures are for fiscal years beginning July 1 for 1870-1908 and for calendar years thereafter. They include imports from foreign sources and receipts from noncontiguous territories. They are reported in terms of "raw value" (the equivalent in terms of 96° sugar as defined in the Sugar Act of 1948), rather than in terms of cane sugar, because of fluctuations in the yield of raw sugar from cane.

The price weight is an approximation of domestic farm price per ton of raw value, rather than the price of raw value sugar which includes processing costs. It has been derived from the 1954 season average farm price for sugar cane ($6.94 per ton) and the conversion factor of 177 pounds of raw value sugar per ton of cane (see *Ag. Stat. 1956,* Table 110). This results in an approximate farm price of $78.4 per ton of sugar, raw value (6.94 times 2000/177).

COL. B. The quantity figures are given on a declared weight basis for years beginning July 1. They are general imports through 1932 and imports for consumption thereafter. The only farm price available is quoted in terms of farm sales weight. An approximation of farm price per pound of declared weight has been derived by multiplying the farm price ($.511/lb.) by 1.135, which is the factor used to convert declared weight exports into farm-sales-weight exports (see FAS Stat. Bull. 179, Table 220, footnote 3).

COL. C. The quantities are for years beginning August 1. The price is for season beginning in August. Both prices and quantities refer to gross weights, i.e., lint plus tare.

COL. D. The quantity figures are for calendar years, as taken from Banna, *op. cit.* Edible olive oil imports have been subtracted in order to obtain an approximation of inedible oil imports. (Certain other oils are imported for edible purposes, but they are relatively insignificant.) No comparable figures are available for years before 1912.

Vegetable oil imports are essentially competitive with domestic oils in terms of end use. For the most part, however, they are derived from plants that are exotic to the United States and consequently no approximation of farm price is readily available. Castor and coconut oil are currently the most important imports (excluding olive oil, which is treated separately). Linseed and palm oil previously ranked with these. An approximation of a price weight has been derived on the assumption that the relationship between domestic flaxseed and linseed oil is similar to the relationship between oils and oil seeds imported.

In 1951-55, the average unit value of oil imports was $.197 per pound c.i.f. (FAS Stat. Bull. 179, Table 26, and Banna, *op. cit.,* Table 75). The wholesale price for linseed oil at New York, years beginning July, 1951-54 average, was $.175 per pound (*Ag. Stat. 1956,* Table 167), and the season average farm price for flaxseed was $3.40 per bushel (*ibid.,* Table 160). During the same period, each bushel of flaxseed crushed yielded 19.9 pounds of linseed oil (*ibid.,* Table 166). Not all of the value of flaxseed can be ascribed to linseed oil, since the residual meal has a significant market value as well as the oil. At the wholesale level it was found that 69% of total value of flaxseed products was in oil and the balance in meal (*ibid.,* Tables 166 and 167). On this basis the farm price for flaxseed going to oil could be estimated at 69% of $3.40, or $2.35 per bushel. If this is then translated into oil equivalent by dividing the price per bushel ($2.35) by the yield of oil per bushel (19.9 pounds), the approximate farm price for linseed oil is $.118 per pound. This represents about 67% of the wholesale price. When this ratio is applied to the average unit value of oil imports ($.197) the derived price weight is

(Continued on next page)

AC-4. AGRICULTURE: Exports

(million dollars; 1954 prices except as noted)

	Wheat	Rice	Corn	Tobacco	Cotton	Soybeans	Hogs, pork, & products	Cattle, beef, & products	Butter	Lard	Tallow	Oleo oil	Agriculture, exports		
													1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1870	112		26	125	485		24	16	2	13	6		186	386	810
1871	83		62	136	311		42	18	4	34	14		162	331	700
1872	110		49	124	410		114	18	2	39	14		212	418	880
1873	194		51	184	455		175	20	2	35	18		272	530	1130
1874	155		40	130	423		159	28	3	28	12		237	463	980
1875	159		89	127	504		116	30	2	28	13		257	512	1070
1876	121		101	164	482		145	28	10	40	17		264	527	1110
1877	195		129	165	538		201	64	11	58	15	*	340	660	1380
1878	320		121	187	548		253	81	18	55	18	1	401	769	1600
1879	386		160	125	623		311	110	19	63	20	1	468	885	1820
1880	399		119	132	741		325	137	15	64	17	1	497	948	1950
1881	261		34	130	576		325	125	7	42	9	1	379	726	1510
1882	318		79	136	769		208	86	6	38	7	1	408	799	1650
1883	242		52	120	628		153	88	10	45	11	2	331	655	1350
1884	286		83	134	628		171	109	11	48	9	1	368	720	1480
1885	205		87	170	704		179	105	9	49	7	1	368	734	1520
1886	333		55	177	717		193	96	6	54	11	2	403	790	1640
1887	261		41	152	766		192	88	5	50	17	1	381	759	1570
1888	193		111	130	793		165	100	8	54	14	1	383	767	1570
1889	237		142	148	828		176	136	14	79	20	3	442	879	1780
1890	231		37	145	984		262	220	7	84	20	3	488	979	1990
1891	485		110	148	990		259	240	7	77	16	4	589	1150	2340
1892	416		79	154	749		253	230	4	62	11	5	494	963	1960
1893	356		74	169	892		201	195	6	75	10	5	489	970	1980
1894	316		58	175	1180		220	190	2	80	5	3	540	1090	2230
1895	276		168	171	791		235	189	9	86	10	4	483	950	1940
1896	316		274	182	1040		237	209	15	96	14	5	595	1180	2390
1897	469		288	153	1300		279	225	12	120	15	5	723	1420	2870
1898	481		284	165	1290		362	212	9	120	19	6	744	1450	2950
1899	405		280	200	1050		359	225	9	112	16	6	669	1300	2660
1900	469		217	183	1140		326	242	11	103	14	6	684	1330	2710
1901	507		23	175	1170		330	248	8	94	6	6	639	1250	2570
1902	441		125	214	1190		248	229	5	83	5	5	625	1250	2540
1903	265		77	181	1040		217	257	6	95	14	7	527	1060	2160
1904	98		137	194	1500		223	253	6	103	11	6	601	1250	2530
1905	214		163	181	1200		262	274	14	125	18	8	602	1210	2460
1906	320		131	198	1500		278	236	7	106	23	8	683	1380	2810
1907	354		58	192	1290		236	197	4	102	16	8	595	1200	2460
1908	246		55	167	1500		244	136	4	89	10	7	589	1200	2460
1909	189		62	207	1070		188	95	3	61	5	5	444	906	1880
1910	151	2	92	204	1350		127	71	4	80	5	6	489	1010	2090
1911	174	3	52	218	1860		184	62	4	90	7	5	619	1290	2660
1912	307	3	72	240	1540		178	38	4	89	5	4	584	1190	2480
1913	314	2	15	259	1600		183	24	3	93	5	4	583	1190	2500
1914	712	6	75	202	1460		152	46	4	74	3	3	673	1320	2740
1915	522	9	74	253	1030		356	154	10	79	4	4	619	1200	2490
1916	437	13	85	236	927		395	116	15	74	2	3	575	1100	2300
1917	282	15	69	168	739		367	146	5	62	1	1	464	891	1860
1918	608	14	25	362	969		691	286	14	89	1	3	768	1450	3060
1919	471	36	24	367	1130		724	132	18	126	4	3	753	1420	3080
1920	782	33	163	288	1000		363	88	10	103	3	3	722	1350	2840
1921	600	40	239	262	1070		301	54	6	144	4	5	687	1300	2720
1922	477	27	90	258	842		288	42	7	128	4	4	539	1020	2160
1923	339	17	31	318	978		396	32	5	172	4	4	555	1070	2300
1924	553	8	15	241	1380		293	34	6	158	5	4	659	1280	2700
1925	229	4	36	294	1390		221	36	4	115	4	4	544	1110	2340
1926	464	23	26	294	1900		172	24	4	117	3	4	715	1450	3030
1927	437	23	29	276	1320		131	23	4	115	4	3	563	1120	2360
1928	348	29	59	323	1410		139	19	4	128	3	3	581	1170	2470
1929	324	21	13	346	1180		155	20	4	139	3	3	517	1040	2210
1930	278	21	4	324	1200		129	18	4	108	3	2	483	981	2090
1931	288	20	6	242	1540	6	86	18	4	96	3	2	540	1110	2320
1932	87	13	13	223	1490	6	67	10	4	92	2	2	455	968	2010
1933	78	7	7	257	1340	1	77	12	3	98	3	1	420	895	1880
1934	46	9	2	202	847	1	81	18	3	73	2	1	288	604	1280
1935	34	6	1	242	1050	10	52	16	4	18	1	*	311	686	1440
1936	46	4	1	228	956	1	45	17	3	22	1	*	287	627	1320
1937	227	22	199	259	1000	5	44	16	3	26	*	*	424	869	1810
1938	246	22	49	263	590	13	58	16	4	37	*	*	301	609	1300
1939	115	20	63	180	1090	31	73	15	4	50	*	*	381	799	1640
1940	86	26	21	97	197	4	62	16	5	37	*	*	135	259	550
1941	76	30	28	164	195	7	185	17	6	68	*	*	189	351	780
1942	71	32	7	162	259	14	458	17	11	110	*	*	292	516	1140
1943	108	32	15	198	202	18	807	27	44	127	*	*	417	720	1580
1944	120	47	24	275	336	30	655	36	46	150	1	*	439	792	1720
1945	676	53	31	305	627	26	333	105	25	108	1	*	583	1090	2290
1946	776	56	183	335	615	32	183	197	8	78	1	*	631	1190	2460
1947	1020	59	14	224	339	36	50	63	8	67	3	*	500	904	1880
1948	1070	66	159	266	833	132	32	14	4	52	4	*	682	1300	2630
1949	653	74	152	276	1010	105	42	9	3	107	17	*	611	1200	2450
1950	793	60	156	268	719	193	42	7	14	89	21	*	607	1180	2360
1951	1020	110	108	298	959	108	52	6	11	119	21	*	723	1370	2810
1952	687	115	199	254	534	100	59	9	9	111	30	*	550	1030	2110
1953	466	104	137	263	657	113	51	18	13	76	48	*	494	964	1950
1954	583	65	132	264	601	160	40	19	27	83	46	*	518	1020	2020
1955	726	85	154	331	390	290	48	21	109	99	52	*	618	1200	2310
1956	1140	171	234	285	1330	391	52	36	87	107	60	*	1020	2010	3890
1957	815	84	258	270	1000	390	55	36	6	90	55	*	790	1590	3060

AC-3, NOTES (continued)

$.133 per pound. This weight is an estimate of the unprocessed, or farm, price for imported oil seeds in oil equivalents.

COL. E. The quantity figures are for calendar years and have been taken from Banna, *op. cit.*, Table 75. The price for oil, equivalent to the farm price for olives, was derived by dividing the season average farm price for olives for crushing (*ibid.*, Table 21), $64 per ton, by the yield of pounds of oil per ton of olives crushed, estimated at 300 (*Ag. Stat. 1956*, Table 250, fn.).

COL. F. The quantities are for calendar years in terms of oil equivalent of oil seed imports and were taken from Banna, *op. cit.*, Table 75. Since the price weight for oils (Col. G above) represents the farm price for oil seeds in oil equivalents, it can be used for oil seed imports as well.

COL. G. The quantity figures are for calendar years and are expressed in terms of dressed weight equivalent. Imports were negligible prior to 1899. The price is for the calendar year. It has been converted from a price per pound live weight to an estimate of price per pound dressed weight at the farm level by dividing by .566, the ratio of dressed weight (excluding lard) to live weight (see USDA, Production and Marketing Administration, *Conversion Factors and Weights and Measures for Agricultural Commodities and Their Products*, 1952, Table 11).

COL. H. The quantity figures are expressed in terms of carcass weight equivalent. Through 1898, the figures refer to years beginning July 1; thereafter they are for calendar years. The price refers to price per pound live weight received by farmers. An estimate of farm price per pound carcass weight was derived by dividing the live weight price by .547, the ratio of carcass weight to live weight (see PMA, *Conversion Factors*, Table 6).

COL. I. The quantity figures are reported in terms of "actual weight" and are given for years beginning July 1 for 1870-1909 and calendar years thereafter. They are general imports through 1909, general imports less re-exports for 1910-32, and imports for consumption thereafter. We have not used the wool net imports table (Table AC-22) because it covers carpet wool (a complementary import) and apparel wool together. The price refers to a marketing season beginning in April.

COLS. J and K. The prices used in the computation of the 1902- and 1929-weighted indexes are as follows:

Commodity	*1902 price weights*	*1929 price weights*
A Sugar [1]	$32./ton	$54.5/ton
B Tobacco	.078/lb.	.208/lb.
C Cotton	38./bale	84/bale
D Vegetable fats and oils [2]	.065/lb.	.071/lb.
E Olive oil [3]	.0132/lb.	.145/lb.
F Oil seeds	.065/lb.	.071/lb.
G Hogs and products	.110/lb.	.166/lb.
H Cattle and products [4]	.077/lb.	.178/lb.
I Wool	.137/lb.	.302/lb.

[1] 1929: Sugarcane price ($3.73 ton: Table AP-17) divided by yield factor (137 lb./ton: *Ag. Yearbook 1931*, p. 691). 1902: Following Strauss & Bean, we have assumed 45% of the New York wholesale price equaled farm realization per ton of sugar.

[2] On reasoning similar to that noted for Col. D above, 72% of the 1925-29 average price of imports was used for 1929; for 1902, the 1900-04 farm price of flaxseed per bushel ($1.22: Strauss & Bean, p. 58) was divided by the yield of oil per bushel, 18.7 lb. (*Ag. Stat. 1936*, Table 72, fn. 3).

[3] Value per gallon divided by 7.6 to get value per pound. To approximate farm value, the 1954 ratio of farm gross income per ton of oil to average value of imported oil ($.213/$.249) was applied to average 1902 and 1929 value of imported olive oil.

[4] Farm price converted to carcass weight equivalent by dividing by .533, the 1947-49 average (see PMA, *Conversion Factors*, Table 6).

AC-4, SOURCES

Calculation of Index in 1954 Prices:

COL. A, Wheat and wheat flour. Quantity times 1954 price, $2.12/bu.
Quantity:
1870-1955. *Ag. Stat. 1952*, Table 1, and *1956*, Table 1, domestic exports.
1956-57. USDA, *Foreign Agricultural Trade*, fiscal year 1957-58, Dec. 1958, p. 14.
Price: Table AP-3, Col. C.

COL. B, Rice. Quantity times 1954 price, $4.57/cwt.
Quantity:
1910-53. FAS Stat. Bull. 179, Table 56, rice (rough basis exports).
1954-57. Agricultural Marketing Service, *Agriculture Outlook Charts 1959*, Table 35.
Price: Table AP-4, Col. E.

COL. C, Corn and corn products. Quantity times 1954 price, $1.43/bu.
Quantity: *Ag. Stat. 1952*, Table 38, and *1956*, Table 34, corn and corn products exports; and *Agriculture Outlook Charts 1959*, Table 61.
Price: Table AP-6, Col. G.

COL. D, Tobacco. Quantity times 1954 price, $.511/lb.
Quantity:
1870-1909. *Ag. Stat. 1952*, Table 149, domestic exports, times 1.135 (to adjust to farm-sales basis; see notes).
1910-54. FAS Stat. Bull. 179, p. 180, exports.
1955. *Ag. Stat. 1957*, Table 147.
1956-57. Agricultural Marketing Service, *Tobacco Statistics 1958*, p. 9.
Price: Table AP-37, Col. L.

Price: Table AP-19, Col. J.

COL. E, Cotton. Table AC-12, Col. C, times $168/bale (Table AP-20, Col. G).

COL. F, Soybeans. Quantity times 1954 price, $2.47/bu.
Quantity:
1931-54. FAS Stat. Bull. 179, Table 204, soybeans exports, plus exports of soybean oil (soybean equivalent), Table 211.
1955-57. By phone from U.S. Department of Agriculture.
Price: Table AP-23, Col. A.

COL. G, Hogs, pork, and pork products. Table AC-15, Col. H, times $.382/lb. (Table AP-28, Col. D, converted to dressed weight equivalent).

COL. H, Cattle, beef, and beef products. Table AC-18, Col. I, times $.293/lb. (Table AP-29, Col. D, converted to dressed weight equivalent).

COL. I, Butter. Quantity times 1954 price, $.59/lb.
Quantity:
1870-1911. Caroline Gries, *Foreign Trade of the United States, 1790-1929* (U.S. Department of Agriculture, Bureau of Agricultural Economics, 1929): "Dairy Cattle and Dairy Products" (Report F.S. 42), Table 2, butter, domestic exports, plus Table 10, butter shipments to Alaska, plus Table 11, butter shipments to Hawaii, plus Table 12, butter shipments to Puerto Rico (times .805 to obtain fat content).
1912-57. Antoine Banna, *Oilseeds, Fats and Oils, and Their Products, 1909-1953*, Table 79, butter exports, plus Table 80, butter shipments (both times .805 to obtain fat content). (Data brought up to 1957 by U.S. Dept. of Agriculture.)

(continued on next page)

AC-4, SOURCES (continued)

COL. J, Lard. Quantity times 1954 price, $.16/lb.
Quantity:
1870-1911. Gries, *op. cit.*, "Hogs, Pork, and Pork Products" (Report F.S. 44), Table 9, domestic exports of lard and neutral lard, adjusted to the Banna data on the basis of overlapping years.
1912-57. Banna, *op. cit.*, Table 79, lard exports, plus Table 80, lard shipments. (Data brought up to 1957 by U.S. Dept. of Agriculture.)
Price: See notes, below.

COL. K, Tallow. Quantity times 1954 price, $.04/lb.
Quantity:
1870-1911. Gries, *op. cit.*, Table 9, domestic exports, tallow, adjusted to Banna on the basis of overlapping years.
1912-57. Banna, *op. cit.*, Table 79, tallow, inedible, and greases, exports; and USDA.
Price: See notes.

COL. L, Oleo oil. Quantity times 1954 price, $.04/lb.
Quantity:
1870-1911. Gries, *op. cit.*, "Beef and Beef Products" (Report F.S. 45), Table 8, domestic exports, oleo oil.
1912-57. Banna, *op. cit.*, Table 79, oleo oil exports; and USDA.

COLS. M and N, Computed exactly as Col. O, except that 1902 and 1929 price weights were used. (For weights, see notes.)

COL. O, The sum of Cols. A through L (with links for series missing in earlier years).

AC-4, NOTES

* Less than $500,000.

COLS. M, N, and O are indexes of exports, and are of course not all inclusive. We estimate that total agricultural exports were about 32% higher (see notes to Table AC-1).

Fiscal year data ending June 30 have been converted to years beginning July wherever necessary.

COL. A. Quantities are for years beginning July; price is the average for a season that begins in June in most states. Exports of wheat flour have been converted to grain equivalent.

COL. B. Exports, on rough basis, are for years beginning July 1 through 1936 and years beginning August 1 from 1937 to date. The price per bag (or 100 lb.) is season average beginning in August.

COL. C. Quantities are for years beginning October and price refers to a season that also begins in October. Exports of corn meal are included in terms of grain equivalent.

COL. D. The quantity figures are estimates of exports on a farm-sales-weight basis and are for fiscal years through 1922 and crop years thereafter. The price is a season average price for tobacco at the farm. The figures have been converted from a declared weight basis to a farm-sales-weight basis by multiplying by 1.135 for all years through 1949 and thereafter by conversion factors depending upon composition of leaf exports (see FAS Stat. Bull. 179, Table 220, fn. 3).

COL. E. Quantities are for years beginning August 1. The price is for season beginning in August. Both price and quantities refer to gross weights, i.e., lint plus tare. Price per pound of $.336 has been converted to price per bale by multiplying by 500.

COL. F. Exports have been derived by adding soybean equivalent of soybean oil to soybeans. The factors of conversion used to obtain soybean equivalent of soybean oils were taken from Banna, *op. cit.*, Table 23, production of oil per bushel crushed. The quantity figures are for years beginning October and the price refers to a season beginning September.

COL. G. Exports have been expressed in terms of carcass weight equivalents for years beginning July 1 through 1898 and calendar years thereafter. The price refers to calendar years and to live weight pounds. Price has been converted to carcass weight equivalent by dividing by .566, the ratio of carcass weight excluding lard to live weight (see PMA, *Conversion Factors,* Table 11).

COL. H. Exports have been expressed in terms of carcass weight equivalent. For years through 1898, the figures refer to years beginning July 1; thereafter to calendar years. The price refers to calendar year price per pound live weight. This has been converted to price per pound carcass weight by dividing by .547, the ratio of carcass weight to live weight (PMA, *Conversion Factors,* Table 6).

COLS. I, J, K, L. The Gries source (reported for years ending June 30) has been changed to years beginning July 1 to be more consistent with material reported on a crop year basis. The Banna source is for calendar years. The two series have been spliced by summing the annual figures for 1912-29 from Banna and obtaining the ratio of this to the sum of the Gries figures for 1911-28 plus half of the 1929 figures and minus half of the 1911 figures.

There were insignificant differences in the series for lard and oleo oil, and only a 5% difference in butter. In the tallow series, however, the Banna source gave figures that were 4.5 times the Gries figures. The difference here was due to the inclusion of greases by Banna. There are no data on greases in Gries. A rough estimate has been derived by multiplying the Gries series by 4.5 to match the Banna series.

COL. I. Butter exports include shipments and, for recent years, Department of Agriculture deliveries. In 1954, deliveries amounted to 95% of the total and consequently are considerably higher, in value terms, than exports on a commercial basis only, as reported by the Department of Commerce. Through 1911, exports and shipments are for years beginning July 1, thereafter on a calendar year basis. The figures, reported in terms of actual weight, have been reduced to fat content by multiplying by .805 (see Banna, *op. cit.*, Table 79, fn. 1). The price is for butterfat in cream as received by farmers.

COL. J. Since no farm price for lard is available, one has been derived from estimates of yield and prices of hogs. Lard had a wholesale price in 1954 at Chicago of $20.76 per cwt. The composite wholesale value of the hog was $28.32 per cwt. for all hog products fresh and cured. If this relationship is applied to the farm price for hogs ($21.60 per cwt. in 1954, Table AP-28, Col. D), a figure of $15.86 per cwt. or $.16 per lb. is derived as the farm price for lard (see AMS, *Prices of Hogs and Hog Products,* Statistical Bulletin 205, Mar. 1957, Table 40).

The quantity figures are for years beginning July 1 through 1911 and calendar years thereafter.

COLS. K and L. The estimate of farm price for tallow and oleo oil has been derived by the same method that was used for lard (see above). Price of tallow at Chicago in 1954 was $.061 per lb. no. 1 inedible; (*Ag. Stat. 1956,* p. 140). Composite wholesale value of beef and beef products was $25.36 per 100 lb. live weight. When this relationship is applied to farm price for cattle of $.16 per lb., we derive an estimate of $.04 per lb. as the farm price for tallow. It is assumed that oleo oil can be valued at the same price.

Quantity figures for both oleo oil and tallow exports are for fiscal years beginning July 1 through 1911 and for calendar years thereafter.

COLS. M and N. The prices used in the calculation of the 1902- and 1929-weighted indexes are as follows:

Commodity	*1902 price weights*	*1929 price weights*
A Wheat and flour	$.63/bu.	$1.03/bu.
B Rice	1.69/cwt.	2.22/cwt.
C Corn and products	.424/bu.	.764/bu.
D Tobacco	.069/lb.	.183/lb.
E Cotton	38./bale	84./bale
F Soybeans	.70/bu.[1]	1.86/bu.
G Hogs and pork	.11/lb.	.166/lb.
H Cattle and beef	.077/lb.[2]	.178/lb.[2]
I Butter	.20/lb.	.45/lb.
J Lard	.046/lb.[3]	.069/lb.[3]
K Tallow	.01/lb.[4]	.023/lb.[4]
L Oleo oil	.01/lb.[4]	.023/lb.[4]

[1] Estimated from price of imported soybean oil for the years 1912-16, assuming the ratio of the price of oil to the price of soybeans was the same as in 1951-55.

[2] The live weight price in Table AP-29 was converted to a dressed weight equivalent by dividing by .533, the 1947-49 average ratio (PMA, *Conversion Factors*, Table 6).

[3] Same ratio of lard price to farm price of hogs live weight was assumed for 1902 and 1929 as was estimated for 1954 (see note to Col. J, above).

[4] Same ratio of farm price of tallow and of oleo oil to farm price of cattle was assumed for 1902 and 1929 as was estimated for 1954 (see note to Cols. K and L, above).

Except as noted above, the price weights for 1902 and 1929 were derived in ways exactly similar to those for 1954.

AC-5. AGRICULTURE: Consumption

(billion dollars; 1954 prices except as noted)

	Net supplementary imports	Net imports	Adjustment for inventory changes	All agriculture, output	Preferred series, agriculture, consumption, except complementary imports			Preferred series, agriculture, total consumption		
					1902 weights	1929 weights	1954 weights	1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I	J
1870	-.97	-.75		5.8	1.4	2.7	4.8	1.4	2.8	5.0
1871	-.78	-.49		6.0	1.5	3.0	5.2	1.6	3.1	5.5
1872	-1.02	-.76		6.5	1.6	3.0	5.5	1.6	3.2	5.7
1873	-1.35	-1.13		6.4	1.4	2.9	5.1	1.4	3.0	5.3
1874	-1.15	-.92		6.3	1.5	3.0	5.2	1.5	3.1	5.4
1875	-1.31	-1.07		6.7	1.5	3.1	5.4	1.6	3.2	5.6
1876	-1.34	-1.09		6.8	1.6	3.2	5.5	1.6	3.3	5.7
1877	-1.69	-1.43		7.7	1.7	3.4	6.0	1.7	3.5	6.3
1878	-1.97	-1.74		7.9	1.7	3.5	5.9	1.8	3.6	6.2
1879	-2.23	-1.89		8.2	1.6	3.4	6.0	1.7	3.6	6.3
1880	-2.41	-2.07		8.6	1.7	3.7	6.2	1.8	3.8	6.5
1881	-1.82	-1.48		8.0	1.8	3.6	6.2	1.8	3.8	6.5
1882	-2.00	-1.65		9.0	1.9	4.1	7.0	2.0	4.2	7.3
1883	-1.56	-1.18		8.8	2.1	4.2	7.2	2.1	4.4	7.6
1884	-1.73	-1.33		9.5	2.2	4.5	7.8	2.3	4.7	8.2
1885	-1.78	-1.33		9.4	2.1	4.5	7.6	2.2	4.7	8.1
1886	-1.91	-1.45		9.5	2.2	4.5	7.6	2.3	4.7	8.0
1887	-1.85	-1.41		9.4	2.1	4.4	7.6	2.2	4.6	8.0
1888	-1.84	-1.45		9.9	2.3	4.8	8.1	2.4	5.0	8.4
1889	-2.12	-1.65		10.4	2.3	4.9	8.3	2.4	5.1	8.7
1890	-2.36	-1.92		10.4	2.3	4.8	8.0	2.4	5.0	8.5
1891	-2.79	-2.33		12.6	2.7	5.7	9.8	2.9	5.9	10.3
1892	-2.27	-1.71		10.2	2.3	4.7	7.9	2.4	5.0	8.5
1893	-2.30	-1.87		10.3	2.3	4.8	8.0	2.4	5.0	8.4
1894	-2.56	-2.05		11.0	2.4	5.0	8.4	2.5	5.2	9.0
1895	-2.11	-1.56		11.0	2.5	5.4	8.9	2.6	5.7	9.4
1896	-2.57	-2.04		11.8	2.6	5.6	9.2	2.7	5.9	9.8
1897	-3.52	-2.94		12.4	2.6	5.3	8.9	2.7	5.6	9.5
1898	-3.57	-2.93		13.0	2.7	5.7	9.4	2.8	6.0	10.1
1899	-3.13	-2.47		12.7	2.8	5.8	9.6	2.9	6.1	10.2
1900	-3.18	-2.58		12.9	2.8	6.0	9.7	2.9	6.3	10.3
1901	-2.99	-2.33		13.0	2.8	6.1	10.0	3.0	6.5	10.7
1902	-2.90	-2.05		13.2	3.0	6.3	10.3	3.1	6.7	11.2
1903	-2.46	-1.71		13.5	3.0	6.8	11.0	3.2	7.1	11.8
1904	-2.87	-2.05		14.2	3.3	6.9	11.3	3.5	7.4	12.2
1905	-2.77	-1.96		14.1	3.3	6.9	11.3	3.5	7.2	12.1
1906	-3.18	-2.44		15.2	3.5	7.4	12.0	3.7	7.8	12.8
1907	-2.82	-2.05		14.4	3.4	7.1	11.6	3.6	7.4	12.4
1908	-2.67	-1.87		14.8	3.5	7.4	12.1	3.8	7.8	12.9
1909	-1.92	-1.01		14.4	3.6	7.6	12.5	3.9	8.1	13.4
1910	-2.19	-1.44		14.8	3.6	7.7	12.6	3.8	8.1	13.4
1911	-2.95	-2.16		15.7	3.7	7.8	12.8	3.9	8.3	13.5
1912	-2.63	-1.73		15.7	3.8	8.0	13.1	4.1	8.5	14.0
1913	-2.64	-1.81		15.4	3.7	7.8	12.8	4.0	8.3	13.6
1914	-2.71	-1.81		16.4	3.9	8.3	13.7	4.2	8.8	14.6
1915	-2.35	-1.29		16.0	3.9	8.3	13.7	4.3	8.9	15.7
1916	-2.09	-1.02		15.3	3.8	8.0	13.2	4.2	8.6	14.3
1917	-1.50	-.31		15.5	3.9	8.4	14.0	4.4	9.0	15.2
1918	-2.87	-1.78		16.8	4.0	8.5	13.9	4.5	9.1	15.0
1919	-2.82	-1.51		16.5	4.0	8.4	13.7	4.6	9.1	15.0
1920	-2.71	-1.59		16.8	4.0	8.7	14.1	4.5	9.2	15.2
1921	-2.72	-1.43		15.4	3.7	7.8	12.7	4.3	8.5	14.0
1922	-1.72	-.29		17.0	4.3	9.3	15.3	5.1	10.1	16.7
1923	-2.01	-.56		17.4	4.5	9.4	15.4	5.1	10.2	16.8
1924	-2.60	-1.08	-.24	17.9	4.3	9.3	15.1	5.0	10.1	16.6
1925	-1.99	-.41	+.03	17.9	4.6	9.7	15.9	5.4	10.7	17.5
1926	-2.80	-1.13	-.44	19.0	4.6	9.7	15.8	5.4	10.7	17.4
1927	-1.96	-.27	+.36	18.1	4.8	10.1	16.5	5.7	11.1	18.2
1928	-2.08	-.26	-.21	18.9	4.8	10.1	16.6	5.8	11.2	18.4
1929	-1.63	+.23	-.01	18.5	4.9	10.2	16.9	5.9	11.3	18.7
1930	-1.69	+.03	-.35	18.8	4.9	10.3	16.8	5.8	11.3	18.5
1931	-2.14	-.27	-1.28	20.0	4.8	10.0	16.6	5.7	11.1	18.4
1932	-1.83	-.27	-.37	18.4	4.7	9.9	16.2	5.5	10.8	17.8
1933	-1.54	+.22	+.88	18.1	5.1	10.6	17.4	6.0	11.6	19.2
1934	-.81	+.78	+1.61	16.5	5.0	10.8	17.3	5.8	11.7	18.9
1935	-.82	+1.09	-1.00	16.8	4.3	9.3	15.0	5.2	10.4	16.9
1936	-.54	+1.35	+1.45	17.3	5.2	11.2	18.2	6.1	12.2	20.1
1937	-1.04	+.94	-2.54	20.3	4.7	10.1	16.7	5.7	11.2	18.7
1938	-.65	+1.18	-1.16	19.2	5.0	10.6	17.4	5.8	11.5	19.2
1939	-1.02	+1.00	-.24	19.8	5.3	11.3	18.5	6.2	12.3	20.6
1940	+.44	+2.68	-.87	20.0	5.5	11.8	19.6	6.7	13.0	21.8
1941	+.62	+3.09	-.77	20.6	5.8	12.5	20.4	7.2	13.7	22.9
1942	-.21	+1.08	-.63	23.0	6.1	13.5	22.2	6.5	14.0	23.4
1943	-.78	+.71	+1.55	23.2	6.8	14.9	24.0	7.1	15.5	25.5
1944	-.96	+.83	-.10	24.2	6.5	14.3	23.1	6.9	15.0	24.9
1945	-1.66	+.23	+.64	23.4	6.4	14.1	22.4	6.8	14.8	24.3
1946	-1.83	+.31	+.39	23.8	6.4	14.0	22.4	7.1	14.9	24.5
1947	-1.10	+1.09	+.77	24.1	6.7	14.6	23.8	7.6	15.6	26.0
1948	-2.03	+.39	-2.39	25.3	5.9	12.8	20.9	6.9	13.9	23.3
1949	-1.96	+.45	-.90	24.8	6.2	13.7	21.9	7.1	14.7	24.3
1950	-1.59	+.76	+.07	23.9	6.4	14.1	22.4	7.5	15.2	24.7
1951	-2.28	+.05	+.87	24.5	6.5	14.4	23.1	7.5	15.4	25.4
1952	-1.40	+1.01	-.93	25.9	6.6	14.6	23.6	7.7	15.7	26.0
1953	-1.22	+1.16	-1.42	26.2	6.6	14.7	23.6	7.6	15.7	25.9
1954	-1.43	+.61	-1.21	26.3	6.6	14.9	23.7	7.5	15.8	25.7
1955	-1.75	+.51	-1.28	27.0	6.6	15.0	24.0	7.5	16.0	26.2
1956	-3.89	-1.47	-.36	27.8	6.6	15.2	23.5	7.5	16.2	26.0
1957	-2.74	-.43	+.02	26.5	6.6	15.3	23.8	7.5	16.3	26.1

AC-5, SOURCES

COL. A, Net supplementary imports. Table AC-1, Col. F, 1954 prices.

COL. B, Net imports. Table AC-1, Col. I, 1954 prices.

COL. C, Adjustment for crop inventory changes. AMS, *Supply and Utilization of Farm Commodities,* Agricultural Handbook No. 91, Nov. 1955 (with supplements for 1956 and 1959), Table 33, net change in available stock. Adjusted from 1947-49 prices to 1954 prices by ratio of all-farm price index, Table AP-1 (ratio .909).

COL. D, All agriculture, output. Worksheet 1 of this table, Col. F, 1954 prices.

COLS. E and F, Preferred series, agricultural consumption excluding complementary imports, 1902 and 1929 prices. Computed exactly as Col. G, except that 1902 and 1929 prices were used as weights for each component.

COL. G, Preferred series, agricultural consumption excluding complementary imports, 1954 prices. Sum of Cols. A, C, and D.

COLS. H and I, Preferred series, agricultural consumption in 1902 and 1929 prices. Computed exactly as Col. J, except that 1902 and 1929 prices were used as weights for each component.

COL. J, Preferred series, agricultural consumption, 1954 prices. Sum of Cols. B, C, and D.

AC-5, NOTES

COL. C. Minus sign means an addition to stocks, plus sign a reduction. The factor to adjust from 1947-49 prices to 1929 prices (derived from Table AP-1) was .552; to adjust from 1947-49 to 1902 prices, .271.

COL. D. Our Agriculture Output series (Table AO-1) includes livestock series based on production in terms of growth of animals rather than in terms of slaughter. The series above is based on slaughter estimates and measures livestock and products entering the market place. Adjustments have been made for cattle and calves but not for other livestock because such changes are relatively insignificant.

AC-5, WORKSHEET 1. Agriculture Output Based on Livestock Slaughter

(billion dollars; 1954 prices except as noted)

	Cattle	Calves	Livestock & products	All agriculture		
	(1954 weights)			1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F
1870	0.74	0.02	3.99	1.6	3.1	5.8
1871	0.77	0.02	4.29	1.7	3.3	6.0
1872	0.80	0.03	4.54	1.8	3.5	6.5
1873	0.82	0.03	4.40	1.7	3.5	6.4
1874	0.85	0.03	4.33	1.7	3.5	6.3
1875	0.87	0.04	4.42	1.8	3.7	6.7
1876	0.89	0.04	4.59	1.9	3.8	6.8
1877	0.93	0.04	5.01	2.1	4.2	7.7
1878	0.99	0.05	5.20	2.2	4.4	7.9
1879	1.05	0.05	5.28	2.2	4.5	8.2
1880	1.12	0.06	5.39	2.3	4.8	8.6
1881	1.14	0.06	5.45	2.2	4.5	8.0
1882	1.16	0.06	5.45	2.4	5.0	9.0
1883	1.23	0.07	5.83	2.4	4.9	8.8
1884	1.29	0.07	6.13	2.6	5.3	9.5
1885	1.36	0.08	6.22	2.5	5.3	9.4
1886	1.42	0.08	6.12	2.6	5.4	9.5
1887	1.48	0.09	6.16	2.5	5.3	9.4
1888	1.54	0.09	6.47	2.7	5.7	9.9
1889	1.59	0.10	6.75	2.8	5.9	10.4
1890	1.64	0.10	6.88	2.8	5.9	10.4
1891	1.63	0.10	8.00	3.4	7.0	12.6
1892	1.58	0.10	6.46	2.8	5.8	10.2
1893	1.50	0.09	6.60	2.8	5.9	10.3
1894	1.45	0.09	6.80	3.0	6.2	11.0
1895	1.37	0.08	6.89	3.0	6.4	11.0
1896	1.39	0.08	7.43	3.2	6.8	11.8
1897	1.43	0.09	7.64	3.4	7.0	12.4
1898	1.50	0.10	7.74	3.5	7.4	13.0
1899	1.69	0.11	7.87	3.5	7.3	12.7
1900	1.71	0.12	8.02	3.5	7.5	12.9
1901	1.79	0.13	8.10	3.5	7.5	13.0
1902	1.73	0.14	7.76	3.6	7.7	13.2
1903	1.92	0.15	8.44	3.7	7.9	13.5
1904	1.92	0.15	8.56	3.9	8.3	14.2
1905	2.02	0.17	8.80	3.9	8.2	14.1
1906	2.02	0.18	9.08	4.2	8.9	15.2
1907	2.03	0.19	9.27	4.0	8.4	14.4
1908	2.01	0.19	9.22	4.1	8.6	14.8
1909	2.09	0.20	9.05	4.0	8.5	14.4
1910	2.00	0.20	9.22	4.0	8.7	14.8
1911	1.98	0.20	9.50	4.3	9.2	15.7
1912	1.86	0.20	9.25	4.3	9.2	15.7
1913	1.84	0.18	9.25	4.2	9.0	15.4
1914	1.79	0.17	9.25	4.5	9.5	16.4
1915	1.81	0.18	9.60	4.4	9.3	16.0
1916	1.92	0.20	9.68	4.2	8.9	15.3
1917	2.15	0.22	9.65	4.2	9.0	15.5
1918	2.30	0.23	10.32	4.6	9.7	16.8
1919	2.02	0.24	10.12	4.6	9.5	16.5
1920	1.89	0.25	9.88	4.6	9.8	16.8
1921	1.83	0.24	10.14	4.3	9.0	15.4
1922	1.98	0.25	10.95	4.7	10.0	17.0
1923	2.00	0.27	11.40	4.8	10.2	17.4
1924	2.05	0.29	11.25	4.9	10.5	17.9
1925	2.06	0.29	11.11	4.9	10.5	17.9
1926	2.11	0.28	11.51	5.2	11.2	19.0
1927	1.90	0.26	11.76	5.0	10.7	18.1
1928	1.72	0.23	11.58	5.2	11.1	18.9
1929	1.75	0.23	11.58	5.1	10.8	18.5
1930	1.76	0.24	11.69	5.2	11.1	18.8
1931	1.79	0.25	12.09	5.5	11.7	20.0
1932	1.72	0.24	11.92	5.1	10.9	18.4
1933	1.91	0.27	12.23	5.0	10.7	18.1
1934	2.48	0.37	11.78	4.5	10.1	16.5
1935	1.96	0.30	10.75	4.6	10.2	16.8
1936	2.19	0.32	11.62	4.7	10.4	17.3
1937	2.02	0.33	11.42	5.5	12.0	20.3
1938	2.05	0.30	11.97	5.3	11.4	19.2
1939	2.08	0.30	12.76	5.4	11.8	19.8
1940	2.13	0.29	12.97	5.5	12.0	20.0
1941	2.40	0.31	13.76	5.7	12.4	20.6
1942	2.63	0.34	15.26	6.3	13.8	23.0
1943	2.55	0.35	16.00	6.5	14.1	23.2
1944	2.71	0.52	15.80	6.7	14.6	24.2
1945	3.05	0.50	15.83	6.5	14.3	23.4
1946	2.78	0.43	15.23	6.6	14.5	23.8
1947	3.10	0.48	15.30	6.6	14.5	24.1
1948	2.70	0.42	14.58	7.0	15.1	25.3
1949	2.80	0.40	15.24	6.8	15.0	24.8
1950	2.83	0.37	15.61	6.6	14.7	23.9
1951	2.62	0.32	15.62	6.7	14.8	24.5
1952	2.87	0.35	15.58	7.1	15.7	25.9
1953	3.68	0.46	16.12	7.2	16.0	26.2
1954	3.85	0.49	16.85	7.2	16.2	26.3
1955	4.03	0.47	17.37	7.3	16.6	27.0
1956	4.30	0.49	17.78	7.6	17.3	27.8
1957	4.22	0.46	17.66	7.2	16.6	26.5

AC-5, Worksheet, SOURCES

Col. A, Cattle. Table AO-30, Col. F, times $.297/lb. (1954 farm value of cattle output [1] divided by 1954 output reported in Table AO-30; this is live value ($3.848 billion) divided by dressed weight).

Col. B, Calves. Table AO-31, Col. D, times $.298/lb. (1954 farm value of calf output [1] divided by dressed weight).

Col. C, Livestock and products output based on slaughter. Col. A plus Col. B plus, from Table AO-27, the sum of Cols. A plus C through H.

Cols. D and E, Output indicators, 1902 and 1929 prices. Computed exactly as Col. F except that 1902 and 1929 prices were used as weights in the computation.

Col. F, Output indicators, 1954 prices. Col. C plus, from Table AO-1, Col. A plus Col. C minus Col. B.

AC-5, Worksheet, NOTES

[1] See Table AP-26, note 1.

Cols. D and E. The prices used for cattle and calves for the 1902 and 1929 weights are:

	1902	*1929*
Cattle	$.073/lb.	$.181/lb.
Calves	.078/lb.	.219/lb.

AC-6. FOOD: Consumption Per Capita

	Retail weight equivalent (1947-49 = 100)	Price weighted index (1947-49 = 100)	Col. B / Col. A
	A	B	C
1909	105	89	.848
1910	103	88	.854
1911	101	88	.871
1912	105	89	.848
1913	102	87	.853
1914	101	87	.861
1915	102	86	.843
1916	98	86	.878
1917	98	85	.867
1918	101	87	.861
1919	100	88	.880
1920	100	87	.870
1921	97	85	.876
1922	101	89	.881
1923	101	91	.901
1924	101	92	.911
1925	101	91	.901
1926	101	92	.911
1927	100	91	.910
1928	101	91	.901
1929	101	91	.901
1930	99	91	.919
1931	100	90	.900
1932	97	88	.907
1933	96	88	.917
1934	96	89	.927
1935	97	87	.897
1936	98	91	.929
1937	98	90	.918
1938	98	91	.929
1939	100	94	.940
1940	100	95	.950
1941	101	97	.960
1942	101	96	.950
1943	102	97	.951
1944	106	100	.943
1945	106	101	.953
1946	106	104	.981
1947	103	102	.990
1948	99	99	1.000
1949	98	99	1.010
1950	97	100	1.031
1951	97	98	1.010
1952	97	100	1.031
1953	97	101	1.041
1954	96	101	1.052
1955	96	102	1.062
1956	97	104	1.072
1957	96	102	1.062

AC-6, SOURCES

COL. A

1909-55. *Consumption of Food,* Table 38, approximate consumption of food per capita, retail weight equivalent, index 1947-49 = 100.

1956-57. *The National Food Situation,* July 1958, pp. 66-67.

COL. B

1909-55. *Consumption of Food,* Table 39, index of per capita food consumption (price-weighted basis), 1947-49 = 100. All food.

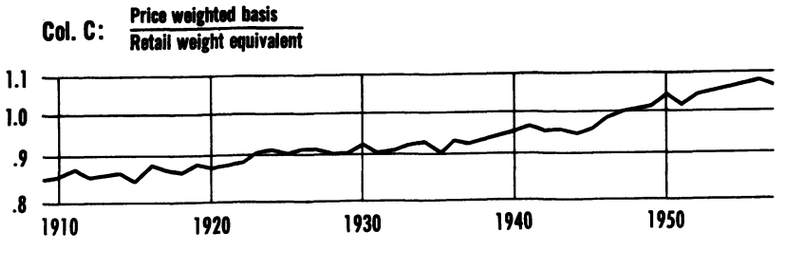
1956-57. *The National Food Situation,* pp. 66-67.

COL. C, Ratio, Col. B/Col. A.

AC-6, NOTES

The two series represent two different bases for showing the trend in per capita food consumption. Col. A has been obtained by the simple addition of pounds of food (retail weight equivalent) consumed per capita. Col. B has been "derived from data on per capita consumption of individual foods, using estimates of retail weights multiplied by average retail prices in 1947-49." Both series refer to civilian consumption only. No series is readily available for years prior to 1909.

The rising trend of the ratios in Col. C (see chart) indicates a movement toward higher priced foods such as meat, fruit, and packaged foods, and away from cheaper foods like flour, potatoes, and cabbage. It does not indicate rising prices for food, as constant prices have been used as weights.



AC-7. WHEAT: Net Imports and Consumption

(million bushels)

	Consumption	Production	Net imports	Apparent consumption (Cols. B plus C)	Col. A / Col. D	Preferred series, consumption
	A	B	C	D	E	F
1870		254	-52.2	201.8		202
1871		272	-37.6	234.4		234
1872		272	-50.7	221.3		221
1873		322	-90.5	231.5		232
1874		356	-72.8	283.2		283
1875		314	-74.5	239.5		240
1876		309	-57.1	251.9		252
1877		396	-92.0	304		304
1878		449	-150	299		299
1879		459	-182	277		277
1880		502	-188	314		314
1881		406	-123	283		283
1882		552	-150	402		402
1883		439	-114	325		325
1884		571	-135	436		436
1885		400	-96.6	303		303
1886		514	-157	357		357
1887		491	-123	368		368
1888		424	-91.0	333		333
1889		504	-113	391		391
1890		449	-109	340		340
1891		678	-229	449		449
1892		612	-196	416		416
1893		506	-168	338		338
1894		542	-148	394		394
1895		542	-130	412		412
1896		523	-149	374		374
1897		606	-221	385		385
1898		768	-227	541		541
1899		655	-191	464		464
1900		599	-221	378		378
1901		762	-239	523		523
1902		687	-208	479		479
1903		663	-125	538		538
1904		556	-43.6	512		512
1905		706	-101	605		605
1906		740	-151	589		589
1907		629	-166	463		463
1908		643	-116	527		527
1909		684	-88.5	596		596
1910		626	-70.2	556		556
1911		618	-78.4	540		540
1912		730	-144	586		586
1913		751	-146	605		605
1914		898	-335	563		563
1915		1009	-240	769		769
1916		635	-181	454		454
1917		620	-103	517		517
1918		904	-277	627		627
1919		952	-217	735		735
1920		843	-313	530		530
1921		819	-266	553		553
1922		847	-205	642		642
1923		760	-132	628		628
1924		842	-255	587		587
1925		669	-92.7	576		576
1926		832	-206	626		626
1927		875	-191	684		684
1928		914	-142	772		772
1929		824	-140	684		684
1930	759	886	-112	774	.981	759
1931	758	942	-124	818	.927	758
1932	723	756	-32.3	724	.999	723
1933	633	552	-25.5	526	1.20	633
1934	654	526	+3.6	530	1.23	654
1935	661	628	+30.7	659	1.00	661
1936	689	630	+26.3	656	1.05	689
1937	697	874	-104	770	.905	697
1938	712	920	-106	814	.875	712
1939	663	741	-43.8	697	.951	663
1940	676	815	-29.5	786	.860	676
1941	667	942	-20.3	922	.723	667
1942	946	969	-24.8	944	1.00	946
1943	1237	844	+96.2	940	1.32	1237
1944	1087	1060	-5.2	1055	1.03	1087
1945	964	1108	-305	803	1.20	964
1946	836	1152	-365	787	1.06	836
1947	903	1359	-480	879	1.03	903
1948	854	1295	-501	794	1.08	854
1949	800	1098	-302	796	1.01	800
1950	718	1019	-354	665	1.08	718
1951	689	988	-442	546	1.26	689
1952	659	1306	-296	1010	.652	659
1953	631	1173	-211	962	.656	631
1954	608	984	-270	714	.852	608
1955	597	935	-333	602	.992	597
1956	583	1004	-529	475	1.23	583
1957	580	947	-373	574	1.01	580

AC-7, SOURCES

Col. A, Consumption

1930-54. *Ag. Stat. 1952*, Table 12, and *1956*, Table 11, continental U.S. disappearance plus military procurements.

1955-57. USDA, *The Wheat Situation*, Aug. 1958, Table 16.

Col. B, Production

1870-1954. *Ag. Stat. 1952*, Table 1 and *1956*, Table 1.

1955-57. *The National Food Situation*, July 1958, p. 76.

Col. C, Net imports. *Ag. Stat. 1957*, Table 1, and USDA, *Foreign Agricultural Trade*, fiscal year 1957-58, Table 9, imports, minus Table 4, exports.

Col. D, Apparent consumption. Col. B plus Col. C.

Col. E, Ratio, Col. A/Col. D.

Col. F, Preferred series

1870-1929. Col. D, transcribed.

1930-57. Col. A, transcribed.

AC-7, NOTES

The production series are for crop years, the net import series and consumption series for years beginning July.

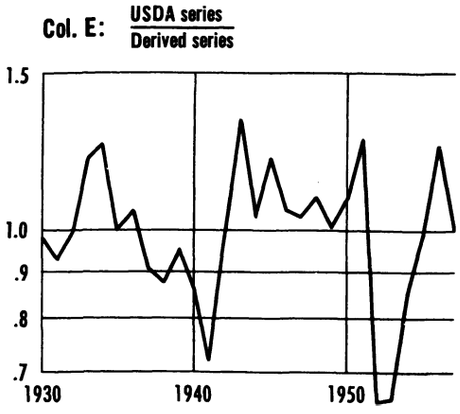
All series include imports and exports of flour in wheat equivalents.

The large consumption figures for 1942-45 (and to a minor degree, 1946-48) are due to a large increase in use for feed and to a lesser extent for alcohol to make synthetic rubber; also, to a small extent, military purchases for relief in occupied areas (see *Ag. Stat. 1957*, p. 15).

Col. A. The data represent actual consumption of wheat for food, seed, industrial uses, and feed, plus procurements for military export and military food use. Shipments to territories, amounting to less than half of one percent of consumption, are not included.

Col. C. The series is from Department of Commerce records and represents general imports minus total exports (domestic and foreign) through 1932 and, beginning 1933, imports for consumption minus domestic exports. It does not include amounts exported under "food for relief or charity."

Col. E. The chart shows the ratio of the USDA series to our derived apparent consumption figures. The geometric average of ratios for 1930-39 is 1.007. Consequently, no adjustments have been made in the level of the series. The differences between the two series are due to the fact that no adjustments are made in Col. D for changes in stock.



AC-8. CORN: Net Imports and Consumption

(billion bushels)

	USDA, domestic disappearance	Output	USDA, net imports	Apparent consumption (Col. B plus Col. C)	Col. A / Col. D	Preferred series, consumption
	A	B	C	D	E	F
1870		1.12	-.018	1.10		1.10
1871		1.14	-.043	1.10		1.10
1872		1.28	-.034	1.25		1.25
1873		1.01	-.036	.97		.97
1874		1.06	-.028	1.03		1.03
1875		1.45	-.062	1.39		1.39
1876		1.48	-.071	1.41		1.41
1877		1.52	-.091	1.43		1.43
1878		1.56	-.085	1.48		1.48
1879		1.75	-.113	1.64		1.64
1880		1.71	-.083	1.63		1.63
1881		1.24	-.024	1.22		1.22
1882		1.76	-.056	1.70		1.70
1883		1.65	-.436	1.21		1.21
1884		1.95	-.058	1.89		1.89
1885		2.06	-.061	2.00		2.00
1886		1.78	-.039	1.74		1.74
1887		1.60	-.029	1.57		1.57
1888		2.25	-.078	2.17		2.17
1889		2.29	-.100	2.19		2.19
1890		1.65	-.026	1.62		1.62
1891		2.34	-.078	2.26		2.26
1892		1.90	-.056	1.84		1.84
1893		1.90	-.052	1.85		1.85
1894		1.62	-.041	1.58		1.58
1895		2.53	-.118	2.41		2.41
1896		2.67	-.192	2.48		2.48
1897		2.29	-.203	2.09		2.09
1898		2.35	-.200	2.15		2.15
1899		2.65	-.197	2.45		2.45
1900		2.66	-.153	2.51		2.51
1901		1.72	-.016	1.70		1.70
1902		2.77	-.088	2.68		2.68
1903		2.52	-.054	2.47		2.47
1904		2.69	-.097	2.59		2.59
1905		2.95	-.115	2.84		2.84
1906		3.03	-.092	2.94		2.94
1907		2.61	-.040	2.57		2.57
1908		2.57	[a] -.039	2.53		2.53
1909		2.61	[a] -.044	2.57		2.57
1910		2.85	[a] -.065	2.79		2.79
1911		2.47	-.036	2.43		2.43
1912		2.95	-.050	2.90		2.90
1913		2.27	.007	2.28		2.28
1914		2.52	-.045	2.48		2.48
1915		2.83	-.048	2.78		2.78
1916		2.43	-.058	2.37		2.37
1917		2.91	-.045	2.86		2.86
1918		2.44	-.009	2.43		2.43
1919		2.68	-.007	2.67		2.67
1920		3.07	-.114	2.96		2.96
1921		2.93	-.168	2.76		2.76
1922		2.71	-.063	2.65		2.65
1923		2.88	-.019	2.86		2.86
1924		2.22	-.008	2.21		2.21
1925		2.80	-.025	2.77		2.77
1926		2.55	-.014	2.54		2.54
1927		2.62	-.018	2.60		2.60
1928		2.67	-.041	2.63		2.63
1929	2.52	2.52	-.008	2.51	1.00	2.52
1930	2.05	2.08	-.002	2.08	.986	2.05
1931	2.47	2.58	-.004	2.58	.957	2.47
1932	2.81	2.93	-.009	2.92	.962	2.81
1933	2.44	2.40	-.004	2.40	1.02	2.44
1934	1.76	1.45	.036	1.49	1.18	1.76
1935	2.21	2.30	.020	2.32	.952	2.21
1936	1.72	1.51	.103	1.61	1.07	1.72
1937	2.21	2.64	-.138	2.50	.884	2.21
1938	2.29	2.55	-.034	2.52	.909	2.29
1939	2.43	2.58	-.043	2.54	.957	2.43
1940	2.49	2.46	-.014	2.45	1.02	2.49
1941	2.79	2.65	-.019	2.63	1.06	2.79
1942	3.19	3.07	-.005	3.07	1.04	3.19
1943	3.11	2.97	-.007	2.96	1.05	3.11
1944	2.99	3.09	-.011	3.08	.971	2.99
1945	2.98	2.87	-.021	2.85	1.05	2.98
1946	2.97	3.22	-.128	3.09	.961	2.97
1947	2.50	2.35	-.009	2.34	1.07	2.50
1948	2.80	3.61	-.112	3.50	.800	2.80
1949	3.09	3.24	-.106	3.13	.987	3.09
1950	3.06	3.07	-.109	2.96	1.03	3.06
1951	3.10	2.93	-.075	2.85	1.09	3.10
1952	2.87	3.29	-.140	3.15	.911	2.87
1953	2.96	3.21	-.095	3.11	.952	2.96
1954	2.84	3.06	-.092	2.97	.956	2.84
1955	2.98	3.23	-.107	3.12	.955	2.98
1956	3.02	3.45	-.164	3.29	.918	3.04
1957	3.17	3.42	-.181	3.24	.978	3.17

AC-8, SOURCES

Col. A

1929-54. *Ag. Stat. 1952*, Table 47, and *1956*, Table 43, domestic disappearance.

1955-57. Supplement for 1958 to AMS Stat. Bull. 159, Table 7.

Col. B, Output. Table AO-6, Col. C, transcribed.

Col. C

1870-1954. *Ag. Stat. 1952*, Table 38, and *1956*, Table 34, net imports.

1955-57. Supplement for 1958 to AMS Stat. Bull. 159, Table 7.

Col. D, Apparent consumption. Col. B plus Col. C.

Col. E, Ratio, Col. A/Col. D.

Col. F, Preferred series

1870-1928. Col. D, transcribed.

1929-57. Col. A, transcribed.

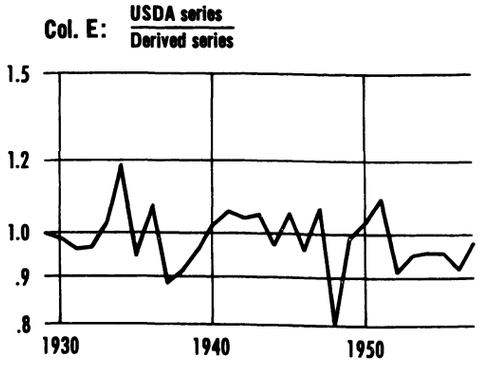
AC-8, NOTES

[a] Figures for 1908-10 are exports only; imports are not available on a crop year basis. Imports, however, were less than 2% of exports in 1911 and 1912 and less than half of one percent for all years prior to 1908.

Col. A. The series is for years beginning in October and is derived from data on stocks (government and private), production for all purposes, imports for consumption, including grain equivalent of corn meal and flour (from Department of Commerce reports), and domestic exports (of grain only; includes exports for military feeding of civilians abroad, 1945-49).

Col. C. Net imports are for years beginning October, compiled from Department of Commerce records. They represent general imports minus domestic and foreign exports through 1932, and, beginning 1933, imports for consumption minus domestic exports. Imports of corn meal are included beginning 1933 and exports for Army Civilian Supply Program are included beginning in 1945.

Col. F. The chart shows the ratio of the USDA series to our derived apparent consumption series. The differences between the series are due to changes in stocks. The over-all average of the ratios is close to 1, and consequently no adjustments have been made in the levels of the spliced series.



AC-9. SUGAR: Net Imports

	Food Cons., imports, calendar year (mil. tons)	Stat. Abst., imports, fiscal year (bil. lb.)	Col. A / Col. B	Imports, Col. B ÷ 2000 (mil. tons)	Food Cons., exports, calendar year (1000 tons)	Stat. Abst., exports, fiscal year (mil. lb.)	Col. E / Col. F	Exports, Col. F × .5168 (1000 tons)	Preferred series, net imports (mil. tons, raw value)
	A	B	C	D	E	F	G	H	I
1870		1.28		.640		14.2		7.34	.633
1871		1.51		.755		16.6		8.58	.746
1872		1.57		.785		34.0		17.6	.767
1873		1.70		.850		29.4		15.2	.835
1874		1.80		.900		35.4		18.3	.882
1875		1.49		.745		67.7		35.0	.710
1876		1.66		.830		42.9		22.2	.808
1877		1.54		.770		50.1		25.9	.744
1878		1.84		.920		82.7		42.7	.877
1879		1.83		.915		40.6		21.0	.894
1880		1.95		.975		32.0		16.5	.958
1881		1.99		.995		19.4		10.0	.985
1882		2.14		1.07		30.6		15.8	1.05
1883		2.76		1.38		85.5		44.2	1.34
1884		2.72		1.36		258.2		133.4	1.23
1885		2.69		1.34		175.8		90.9	1.25
1886		3.14		1.57		204.2		105.5	1.46
1887		2.70		1.35		60.4		31.2	1.32
1888		2.76		1.38		19.8		10.2	1.37
1889		2.93		1.46		47.5		24.5	1.44
1890		3.48		1.74		113.1		58.5	1.68
1891		3.56		1.78		19.4		10.0	1.77
1892		3.77		1.88		29.2		15.1	1.86
1893		4.34		2.17		64.3		33.2	2.14
1894		3.58		1.79		27.2		14.1	1.78
1895		3.90		1.95		10.7		5.53	1.94
1896		4.92		2.46		48.8		25.2	2.43
1897		2.69		1.34		19.9		10.3	1.33
1898		3.98		1.99		17.0		8.79	1.98
1899		4.02		2.01		26.9		13.9	2.00
1900		4.80		2.40		14.0		7.24	2.39
1901		3.94		1.97		15.2		7.86	1.96
1902		5.22		2.61		19.5		10.1	2.60
1903		4.70		2.35		41.6		21.5	2.33
1904		4.78		2.39		27.4		14.2	2.38
1905		5.14		2.57		37.1		19.2	2.55
1906		5.62		2.81		42.9		22.2	2.79
1907		4.92		2.46		43.7		22.6	2.44
1908		5.70		2.85		97.9		50.6	2.80
1909	2.68	5.78	.464	2.89	51	189.3	.269	97.8	2.63
1910	2.89	5.60	.516	2.80	91	89.4	1.02	46.2	2.80
1911	2.96	6.04	.490	3.02	26	102.9	.253	53.2	2.93
1912	3.08	6.59	.467	3.30	53	66.6	.796	34.4	3.03
1913	3.29	6.82	.482	3.41	39	96.9	.402	50.1	3.25
1914	3.62	7.29	.497	3.64	221	601.1	.368	311	3.40
1915	3.57	7.62	.468	3.81	528	1685	.313	871	3.04
1916	3.80	7.47	.509	3.74	856	1268	.675	655	2.94
1917	3.56	6.66	.535	3.33	550	589	.934	304	3.01
1918	3.48	7.76	.448	3.88	223	1065	.209	550	3.26
1919	4.44	9.49	.468	4.74	796	1451	.549	750	3.64
1920	4.84	8.81	.549	4.40	502	790	.635	408	4.34
1921	3.97	10.60	.375	5.30	513	2056	.250	1063	3.46
1922	5.78	10.64	.543	5.32	998	805	1.240	416	4.78
1923	4.69	9.44	.497	4.72	250	312	.801	161	4.44
1924	5.24	11.19	.468	5.60	244	561	.435	290	5.00
1925	5.79				415				5.38
1926	5.84				121				5.72
1927	5.59				140				5.45
1928	5.47				137				5.33
1929	5.78				115				5.66
1930	5.58				90				5.49
1931	4.99				61				4.93
1932	4.80				57				4.74
1933	4.62				58				4.56
1934	5.00				145				4.86
1935	4.58				132				4.45
1936	4.87				86				4.78
1937	5.16				93				5.07
1938	4.88				78				4.80
1939	4.85				153				4.70
1940	4.86				193				4.67
1941	5.85				91				5.76
1942	3.54				55				3.48
1943	4.94				18				4.92
1944	5.48				24				5.46
1945	4.87				34				4.84
1946	4.20				258				3.94
1947	6.03				232				5.80
1948	5.05				77				4.97
1949	5.70				44				5.66
1950	5.96				60				5.90
1951	5.64				82				5.56
1952	5.90				29				5.87
1953	6.13				32				6.10
1954	5.90				20				5.88
1955	6.18				37				6.14
1956	6.50				44				6.46
1957	6.22				30				6.19

AC-9, SOURCES

COL. A

1909-55. *Consumption of Food*, Table 95, receipts from foreign sources and territories.

1956-57. *Ag. Stat. 1959*, Table 128.

COL. B, *Stat. Abstract 1916*, Table 284, Imports brought from islands now designated as noncontiguous territories of U.S., plus total imports exclusive of noncontiguous territories. *Stat. Abstract 1925*, Table 601, total imports into continental U.S. (both sources changed from years ended June 30 to years begun July 1).

COL. C, Ratio, Col. A/Col. B.

COL. D, Col. B converted from pounds to tons.

COL. E, *Consumption of Food*, Table 95, commercial exports and shipments (raw value).

COL. F, *Stat. Abstract 1916*, Table 284, exported from U.S., and *1925*, Table 601, total exports (both have been changed from years ended June 30 to years begun July 1. Figures are for refined, not raw, sugar).

COL. G, Ratio, Col. E/Col. F.

COL. H, Col. F times the ratio of the sum of 1909-24 figures in Col. E (times 1,000) to the sum of 1908-24 figures minus one-half of 1908 and 1924 figures in Col. F (ratio, .5168).

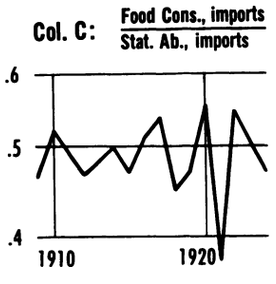
COL. I, Preferred series

1870-1908. Col. D minus Col. H.

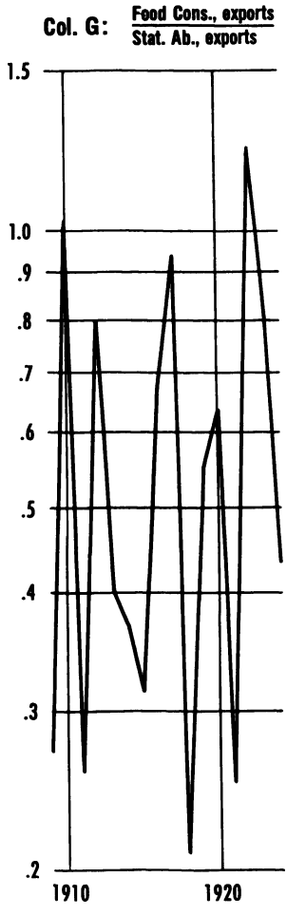
1909-57. Col. A minus Col. E.

AC-9, NOTES

COL. C. The Col. C chart shows the ratio of an import series in tons on a calendar year basis to imports in pounds on a fiscal year basis. A ratio computed on the basis of totals for overlapping years (deducting half of 1908 and 1924 fiscal years from total of 1908-24 fiscal years) shows that the *Statistical Abstract* series is 1.0% higher than the *Consumption of Food* series. The difference is insufficient, in view of the possible error, to warrant adjustment of either series, except for converting Col. B from pounds to tons.



COL. G. Besides the difference in timing (calendar and fiscal years) and units (tons and pounds) there is a difference of about 3% due to the use of raw sugar in Col. E and refined sugar in Col. F.



COL. H. Col. F has been adjusted to match Col. E on the basis of the ratios of the sums of each for overlapping years. As a result, Col. H is an approximation of sugar exports in tons, raw value.

AC-10. SUGAR: Consumption

(million tons)

	USDA, domestic disappearance, calendar year	Stat. Abst., retained for domestic consumption, fiscal year	Col. A / Col. B	Preferred series, consumption
	A	B	C	D
1870		.721		.721
1871		.825		.825
1872		.835		.835
1873		.891		.891
1874		.952		.952
1875		.799		.799
1876		.906		.906
1877		.823		.823
1878		1.00		1.00
1879		.985		.985
1880		1.10		1.10
1881		1.07		1.07
1882		1.21		1.21
1883		1.49		1.49
1884		1.34		1.34
1885		1.41		1.41
1886		1.56		1.56
1887		1.51		1.51
1888		1.55		1.55
1889		1.60		1.60
1890		1.94		1.94
1891		1.96		1.96
1892		2.13		2.13
1893		2.47		2.47
1894		2.16		2.16
1895		2.25		2.25
1896		2.80		2.80
1897		1.73		1.73
1898		2.30		2.30
1899		2.24		2.24
1900		2.79		2.79
1901		2.51		2.51
1902		3.19		3.19
1903		2.83		2.83
1904		3.01		3.01
1905		3.25		3.25
1906		3.54		3.54
1907		3.30		3.30
1908		3.64		3.64
1909	3.57	3.64	.981	3.57
1910	3.73	3.62	1.030	3.73
1911	3.89	3.93	.990	3.89
1912	3.87	4.12	.939	3.87
1913	4.23	4.40	.961	4.23
1914	4.29	4.31	.995	4.29
1915	4.17	3.98	1.048	4.17
1916	4.19	4.23	.991	4.19
1917	4.32	4.04	1.069	4.32
1918	4.18	4.39	.952	4.18
1919	4.87	4.87	1.000	4.87
1920	4.87	5.27	.924	4.87
1921	5.07	5.62	.902	5.07
1922	6.15	5.89	1.044	6.15
1923	5.42	5.61	.966	5.42
1924	6.08	6.50	.935	6.08
1925	6.46			6.46
1926	6.56			6.56
1927	6.52			6.52
1928	6.69			6.69
1929	6.32			6.32
1930	7.22			7.22
1931	6.67			6.67
1932	6.32			6.32
1933	6.29			6.29
1934	6.34			6.34
1935	6.62			6.62
1936	6.68			6.68
1937	6.65			6.65
1938	6.63			6.63
1939	6.86			6.86
1940	7.03			7.03
1941	8.06			8.06
1942	5.46			5.46
1943	6.35			6.35
1944	7.18			7.18
1945	6.14			6.14
1946	5.67			5.67
1947	7.47			7.47
1948	7.34			7.34
1949	7.51			7.51
1950	8.28			8.28
1951	7.68			7.68
1952	8.12			8.12
1953	8.45			8.45
1954	8.18			8.18
1955	8.42			8.42
1956	8.96			8.96
1957	8.77			8.77

AC-10, SOURCES

COL. A

1909-55. *Consumption of Food*, Table 95, sugar, cane and beet, raw value, domestic disappearance, military and civilian.

1956-57. *Ag. Stat. 1959*, Table 128.

COL. B, *Stat. Abstract 1916*, Table 284, and *1925*, Table 601, retained for consumption, changed from years ended June 30 to years begun July 1, and converted from pounds to tons.

COL. C, Ratio, Col. A/Col. B.

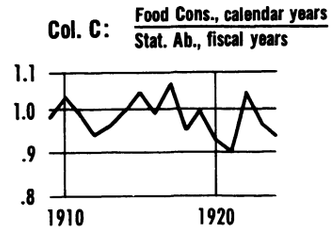
COL. D, Preferred series

1870-1908. Col. B, transcribed (fiscal years).

1909-57. Col. A, transcribed.

AC-10, NOTES

COL. B represents apparent consumption, without adjustment for changes in stocks, for fiscal years. Col. A represents apparent consumption, with adjustments for changes in visible stocks, for calendar years. The ratios of the two for the period of overlap are shown in the chart. The ratio of the sum totals for corresponding years (adjusting Col. B by adding half of 1908-09 fiscal year and subtracting half of 1924-25 fiscal year) shows that Col. A is about a quarter of one percent less than Col. B. This difference is insufficient to warrant adjustment of levels, and consequently, a complete series has been obtained by transferring directly from Col. B to Col. A at 1909.



AC-11. TOBACCO: Exports and Consumption

(million pounds)

	Net exports	Consumption
	A	B
1870	208	
1871	226	
1872	204	
1873	310	
1874	218	
1875	212	
1876	275	
1877	276	
1878	316	
1879	207	
1880	220	215
1881	213	244
1882	222	238
1883	195	276
1884	219	251
1885	278	283
1886	289	288
1887	246	299
1888	205	281
1889	229	319
1890	227	325
1891	235	348
1892	239	355
1893	273	330
1894	276	339
1895	266	344
1896	303	330
1897	255	363
1898	272	352
1899	327	369
1900	291	381
1901	274	398
1902	338	428
1903	286	468
1904	305	476
1905	274	487
1906	302	513
1907	298	517
1908	247	510
1909	313	530
1910	309	551
1911	327	565
1912	354	579
1913	391	593
1914	306	589
1915	401	565
1916	371	612
1917	212	660
1918	577	692
1919	571	698
1920	456	640
1921	404	612
1922	384	647
1923	548	689
1924	356	694
1925	469	718
1926	425	737
1927	411	744
1928	489	755
1929	541	797
1930	517	780
1931	359	752
1932	342	690
1933	417	711
1934	316	776
1935	365	776
1936	348	847
1937	392	873
1938	398	865
1939	261	885
1940	102	923
1941	208	1009
1942	200	1131
1943	266	1229
1944	369	1258
1945	460	1294
1946	500	1311
1947	336	1358
1948	363	1402
1949	394	1385
1950	383	1397
1951	412	1468
1952	342	1526
1953	353	1525
1954	352	1448
1955	462	1443
1956	377	1406
1957	347	1426

AC-11, SOURCES

Col. A, Net exports

1870-1955. *Ag. Stat. 1952,* Table 149, and *1956,* Table 139.

1956-57. USDA, *Foreign Agricultural Trade,* fiscal year 1957-58, pp. 26 and 49.

Col. B, Consumption

1880-1943. *Hist. Stat. 1949,* series J-171.

1944-57. *Ag. Stat. 1959,* Table 157 (source, AMS).

AC-11, NOTES

Col. A. Net exports of tobacco are for years beginning July 1, compiled from reports of the U.S. Department of Commerce, and include stems, trimmings, and scrap. They are on a declared weight basis.

Col. B. Principal source of data for 1880-1943 is the *Annual Report of the Commissioner of Internal Revenue.* The figures represent the equivalent in unstemmed leaf tobacco of stemmed leaf or scraps, cuttings, and clippings. They are on a calendar year basis.

AC-12. COTTON: Net Imports and Consumption

	USDA, consumption (mil. lb.)	Production (mil. bales)	Ag. Stat. (mil. bales)		Apparent consumption, B+D-C (mil. bales)	Col. A / Col. E	Preferred series, consumption (bil. lb.)
			Exports	Imports			
	A	B	C	D	E	F	G
1870		4.03	2.89	.003	1.14		.559
1871		2.76	1.85	.007	.917		.450
1872		3.65	2.44	.011	1.22		.549
1873		3.87	2.71	.005	1.16		.569
1874		3.53	2.52	.005	1.02		.500
1875		4.30	3.00	.005	1.30		.637
1876		4.12	2.87	.006	1.26		.618
1877		4.49	3.20	.007	1.30		.637
1878		4.75	3.26	.006	1.50		.735
1879		5.47	3.71	.007	1.77		.868
1880		6.36	4.41	.009	1.96		.961
1881		5.14	3.43	.009	1.72		.843
1882		6.83	4.58	.009	2.26		1.108
1883		5.52	3.74	.015	1.80		.883
1884		5.47	3.74	.010	1.74		.853
1885		6.37	4.19	.011	2.19		1.07
1886		6.32	4.27	.009	2.06		1.01
1887		6.89	4.56	.011	2.34		1.15
1888		6.92	4.72	.017	2.22		1.09
1889		7.47	4.93	.019	2.56		1.26
1890		8.56	5.86	.045	2.74		1.34
1891	1361	8.94	5.89	.061	3.11	.438	1.36
1892	1155	6.66	4.46	.090	2.29	.504	1.16
1893	1100	7.43	5.31	.058	2.18	.505	1.10
1894	1426	10.03	7.01	.104	3.12	.457	1.43
1895	1195	7.15	4.71	.115	2.56	.467	1.20
1896	1358	8.52	6.17	.119	2.47	.550	1.36
1897	1660	10.99	7.76	.102	3.33	.498	1.66
1898	1755	11.53	7.66	.105	3.97	.442	1.76
1899	1762	9.35	6.23	.140	3.26	.540	1.76
1900	1722	10.12	6.80	.109	3.43	.502	1.72
1901	1950	9.51	6.95	.202	2.76	.707	1.95
1902	2001	10.63	7.08	.151	3.70	.541	2.00
1903	1903	9.85	6.21	.103	3.74	.509	1.90
1904	2162	13.44	8.91	.129	4.66	.464	2.16
1905	2367	10.58	7.12	.144	3.60	.658	2.37
1906	2437	13.27	8.94	.227	4.56	.534	2.44
1907	2180	11.11	7.67	.153	3.59	.607	2.18
1908	2464	13.24	8.96	.181	4.46	.552	2.46
1909	2197	10.00	6.35	.170	3.82	.575	2.20
1910	2160	11.61	8.03	.245	3.83	.564	2.16
1911	2478	15.69	11.1	.233	4.82	.514	2.48
1912	2665	13.70	9.15	.249	4.80	.555	2.66
1913	2730	14.16	9.51	.273	4.92	.555	2.73
1914	2691	16.14	8.70	.400	7.84	.343	2.69
1915	3100	11.19	6.11	.458	5.54	.560	3.10
1916	3250	11.45	5.52	.311	6.24	.521	3.25
1917	3100	11.30	4.40	.231	7.13	.435	3.10
1918	2966	12.04	5.77	.211	6.48	.458	2.97
1919	2860	11.42	6.71	.732	5.44	.526	2.86
1920	2823	13.43	5.97	.226	7.69	.367	2.82
1921	2601	7.94	6.35	.363	1.95	1.334	2.60
1922	2911	9.76	5.01	.470	5.22	.558	2.91
1923	3123	10.14	5.82	.292	4.62	.676	3.12
1924	2636	13.63	8.24	.313	5.70	.462	2.64
1925	3075	16.10	8.27	.326	8.16	.377	3.08
1926	3214	17.98	11.3	.401	7.10	.453	3.21
1927	3590	12.96	7.86	.338	5.43	.661	3.59
1928	3187	14.48	8.42	.458	6.52	.489	3.19
1929	3425	14.82	7.04	.378	8.16	.420	3.43
1930	2617	13.93	7.13	.108	6.91	.379	2.62
1931	2655	17.10	9.19	.132	8.04	.330	2.66
1932	2464	13.00	8.90	.130	4.23	.581	2.46
1933	3051	13.05	7.96	.148	5.24	.582	3.05
1934	2659	9.64	5.04	.107	4.71	.565	2.66
1935	2755	10.64	6.27	.162	4.53	.608	2.76
1936	3471	12.40	5.69	.265	6.98	.497	3.47
1937	3647	18.95	5.98	.166	13.14	.278	3.65
1938	2918	11.94	3.51	.157	8.59	.340	2.92
1939	3629	11.82	6.50	.176	5.50	.660	3.63
1940	3959	12.57	1.17	.202	11.60	.341	3.96
1941	5192	10.74	1.16	.279	9.86	.527	5.19
1942	5633	12.82	1.54	.180	11.46	.492	5.63
1943	5271	11.43	1.20	.145	10.37	.508	5.27
1944	4790	12.23	2.00	.193	10.42	.460	4.79
1945	4516	9.02	3.73	.349	5.64	.801	4.52
1946	4809	8.64	3.66	.284	5.26	.914	4.81
1947	4666	11.86	2.02	.301	10.14	.460	4.67
1948	4464	14.88	4.96	.173	10.09	.442	4.46
1949	3839	16.13	6.00	.253	10.38	.370	3.84
1950	4683	10.01	4.28	.189	5.92	.791	4.68
1951	4869	15.15	5.71	.079	9.52	.511	4.87
1952	4471	15.14	3.18	.195	12.16	.368	4.47
1953	4456	16.46	3.91	.145	12.70	.351	4.46
1954	4127	13.70	3.58	.150	10.27	.402	4.13
1955	4382	14.72	2.32	.137	12.54	.349	4.38
1956	4363	13.31	7.92	.137	5.53	.789	4.36
1957	4060	10.96	5.96	.144	5.14	.790	4.06

AC-12, SOURCES

COL. A

1891-1918. Barkley Meadows, *Trends in the Consumption of Fibers in the U.S., 1892-1948* (USDA Statistical Bulletin 89, Dec. 1950), Tables 14 and 15, mill consumption of raw fibers.

1919-57. *Ag. Stat. 1952*, Table 110, and *1959*, Table 107, consumption.

COL. B, Production. Table AO-22, Col. A, transcribed.

COL. C, *Ag. Stat. 1952*, Table 84, and *1959*, Table 84, exports (domestic exports for years beginning in August; equivalent bales of 500 lb. gross weight; linters excluded beginning in 1914).

COL. D, *Ibid.*, imports (imports for consumption beginning in 1934; general imports minus re-exports for earlier years; data in terms of bales of 500 lb. gross weight for years beginning in August).

COL. E, Apparent consumption. Col. B plus Col. D minus Col. C.

COL. F, Ratio, Col. A/Col. E.

COL. G, Preferred series

1870-90. Col. E times the average of the 1891-1900 ratios of Col. F (.4903).

1891-1957. Col. A, transcribed.

AC-12, NOTES

COL. A. The data are for years beginning September 1 for 1891-1913; beginning July 1 for 1914-16; calendar years thereafter. Linters included 1891-1918, excluded thereafter. The 1917 figure is interpolated between the fiscal year beginning July 1, 1916, and the calendar year 1918.

COL. E. The apparent consumption figures do not take stock changes into consideration. The inclusion of linters in exports prior to 1914 probably does not significantly affect the consistency of the series because foreign trade data indicate that linters made up only about one percent of unmanufactured cotton exports prior to 1920.

COL. F. This column shows the ratios of reported consumption figures to our derived apparent consumption figures. The differences are due to the following: (1) the former is in pounds, the latter in bales; (2) the former is for calendar years, the latter for crop years; and (3) the former include allowances for changes in stocks and the latter do not.

AC-13. FATS AND OILS: Net Imports and Consumption

	Gross imports	Exports	Preferred series, net imports (Col. A minus Col. B)	Preferred series, domestic disappearance (billion lb.)
	(million pounds)			
	A	B	C	D
1921	841	1441	-600	5.71
1922	1201	1154	47	6.45
1923	1454	1393	61	6.88
1924	1223	1317	-94	7.08
1925	1383	1045	338	7.48
1926	1595	1024	571	7.67
1927	1606	1032	574	7.90
1928	1653	1053	600	8.08
1929	2165	1104	1061	8.34
1930	1791	898	893	8.02
1931	1747	811	936	7.99
1932	1279	793	486	7.64
1933	1725	817	908	7.79
1934	1476	611	865	8.22
1935	2519	189	2330	8.32
1936	2275	218	2057	8.70
1937	2707	232	2475	8.86
1938	1803	314	1489	8.66
1939	1833	525	1308	9.18
1940	1610	382	1228	9.26
1941	1867	581	1286	10.4
1942	986	870	116	9.86
1943	896	1365	-469	9.61
1944	969	1483	-514	9.85
1945	836	923	-87	9.48
1946	772	734	38	9.11
1947	1325	828	497	10.2
1948	1272	894	378	10.2
1949	1104	2248	-1144	[a]10.2
1950	1320	2045	-725	[a]11.5
1951	1160	2446	-1286	[a]10.8
1952	1001	2279	-1278	[a]10.8
1953	1001	2655	-1654	[a]10.8
1954	994	3935	-2941	[a]11.1
1955	1047	4121	-3074	[a]11.6
1956	984	4948	-3964	[a]11.7
1957	1006	4665	-3659	[a]11.7

AC-13, SOURCES

COL. A

1921-1948. Antoine Banna, *Oilseeds, Fats and Oils, and Their Products 1909-1953* (AMS Stat. Bull. 1947, 1954), Table 63, imports, plus production from imported materials, minus re-exports.

1949-1957. *Ag. Stat. 1959,* Table 214, imports and production from imported materials.

COL. B

1921-1948. Banna, *loc. cit.,* commercial exports plus voluntary or civilian relief exports plus shipments to U.S. territories.

1949-1957. *Ag. Stat. 1959,* Table 214, exports.

COL. C, Preferred series, net imports. Col. A minus Col. B.

COL. D, Preferred series, consumption

1921-1948. Banna, *loc. cit.,* domestic disappearance.

1949-1957. *Ag. Stat. 1959,* Table 214, domestic disappearance.

AC-13, NOTES

[a] Includes government stockpiling.

All the series above refer to total animal and vegetable fats and oils, edible and inedible, including lard and fat content of butter.

COLS. A and B. Figures for re-exports, available in AMS Stat. Bull. 147, have been deducted from imports for 1921-50. *Agricultural Statistics* includes re-exports with exports, providing no breakdown. For the years in question, however, it is believed that the amount of re-exports is insignificant.

COL. D. Data for 1949-57 include quantities of coconut, palm, castor, and sperm oils held by the government for stockpiling of strategic materials. During this period, butter consumption went down and lard and margarine consumption increased. The total of the equally weighted components conceals this shift in the pattern of consumption.

AC-14. MEAT: Consumption

	Pork and beef (bil. lb., dressed weight)	Col. C / Col. A	Preferred series, meat consumption (bil. lb., dressed weight)
	A	B	C
1887	10.0		10.5
1888	10.7		11.2
1889	11.0		11.5
1890	10.8		11.3
1891	13.8		14.5
1892	9.8		10.3
1893	10.3		10.8
1894	10.6		11.1
1895	9.9		10.4
1896	10.4		10.9
1897	10.5		11.0
1898	10.6		11.1
1899	10.8		11.3
1900	11.0		11.5
1901	11.2		11.8
1902	10.9		11.4
1903	11.7		12.3
1904	12.0		12.6
1905	12.5		13.1
1906	12.7		13.3
1907	13.2		13.9
1908	13.9		14.6
1909	13.4	1.045	14.0
1910	12.9	1.046	13.5
1911	13.6	1.051	14.3
1912	13.2	1.053	13.9
1913	13.3	1.053	14.0
1914	13.2	1.053	13.9
1915	13.0	1.046	13.6
1916	13.7	1.044	14.3
1917	13.5	1.037	14.0
1918	14.3	1.035	14.8
1919	14.0	1.043	14.6
1920	13.9	1.043	14.5
1921	13.9	1.043	14.5
1922	14.6	1.041	15.2
1923	15.9	1.038	16.5
1924	16.2	1.037	16.8
1925	15.6	1.038	16.2
1926	15.6	1.038	16.2
1927	15.4	1.039	16.0
1928	15.2	1.046	15.9
1929	15.3	1.046	16.0
1930	15.1	1.053	15.9
1931	15.3	1.052	16.2
1932	15.5	1.058	16.4
1933	16.2	1.056	17.1
1934	17.4	1.046	18.2
1935	14.0	1.064	14.9
1935	15.9	1.050	16.7
1937	15.4	1.058	16.3
1938	15.6	1.058	16.5
1939	16.6	1.054	17.5
1940	17.9	1.050	18.8
1941	18.5	1.021	19.4
1942	19.4	1.052	20.4
1943	21.2	1.042	22.1
1944	23.2	1.039	24.1
1945	21.3	1.047	22.3
1946	21.3	1.047	22.3
1947	22.0	1.036	22.8
1948	20.8	1.028	21.6
1949	21.2	1.028	21.8
1950	21.7	1.028	22.3
1951	21.6	1.028	22.2
1952	22.7	1.026	23.3
1953	24.4	1.029	25.1
1954	24.6	1.032	25.4
1955	26.4	1.026	27.1
1956	27.5	1.029	28.3
1957	26.7	1.026	27.4

AC-14, SOURCES

COL. A, Table AC-16, Col. F, plus Table AC-19, Col. I.
COL. B, Ratio, Col. C/Col. A.
COL. C, Preferred series
1887-1908. Col. A times average of 1909-13 ratios in Col. B (1.05).
1909-55. *Consumption of Food,* Table 54E, total meat, military and civilian, consumption.
1956-57. *The National Food Situation,* July 1958, p. 70.

AC-14, NOTES

The difference between the two series, shown in Col. B, is due to the inclusion of lamb and mutton consumption in Col. C and its exclusion from Col. A. Our series has been raised 5% to match the *Consumption of Food* series on the assumption that lamb and mutton consumption has been a constant percentage of total meat consumption.

AC-15. PORK: Exports, Imports, Net Exports

(million pounds, dressed weight)

	Gries: Exports					Richards & Cons. of Food, exports excluding lard	Col. F / Col. E	Preferred series, exports	Preferred series, imports	Preferred series, net exports (Col. H minus Col. I)
	Bacon, ham, sides, & shoulders	Canned pork	Fresh pork	Salted or pickled pork	Total exports					
	A	B	C	D	E	F	G	H	I	J
1870	38.8			23.7	62.5			62.5		62
1871	71.4			37.7	109			109		109
1872	246			54.9	301			301		301
1873	395			61.6	457			457		457
1874	347			67.7	415			415		415
1875	250			53.9	304			304		304
1876	328			52.0	380			380		380
1877	460			66.9	527			527		527
1878	593			69.0	662			662		662
1879	732			81.0	813			813		813
1880	760			92.1	852			852		852
1881	747			103.6	851			851		851
1882	468			77.2	545			545		545
1883	340			59.6	400			400		400
1884	389		.2	57.9	447			447		447
1885	400		.4	68.8	469			469		469
1886	420		.03	83.7	504			504		504
1887	420		.01	82.4	502			502		502
1888	375		.05	56.5	432			432		432
1889	400		.01	61.5	462			462		462
1890	608		.3	76.6	685			685		685
1891	599		.8	78.1	678			678		678
1892	585		.4	77.1	662			662		662
1893	474		.9	50.4	525			525		525
1894	503		11.8	61.0	576			576		576
1895	558		.8	55.9	615			615		615
1896	554		.7	66.7	621			621		621
1897	665		1.3	64.1	730			730		730
1898	850		12.5	84.6	947			947		947
1899	788		42.1	131.7	962	940	.977	940	.5	940
1900	708	15.5	26.4	127.9	878	854	.973	854	.5	854
1901	672	16.3	31.3	133.1	853	865	1.01	865	.6	864
1902	610	17.5	45.0	111.3	784	649	.828	649	.8	648
1903	421	24.8	21.3	91.5	559	569	1.02	569	.9	568
1904	444	17.3	18.8	107.7	588	585	.995	585	1.0	584
1905	465	18.7	15.0	114.1	613	685	1.12	685	1.0	684
1906	555	23.1	13.6	136.1	728	729	1.00	729	1.0	728
1907	459	4.9	11.5	159.8	635	618	.973	618	.9	617
1908	463	9.0	16.6	143.5	632	638	1.01	638	.8	637
1909	456	10.5	9.6	50.3	526	493	.937	493	1	492
1910	298	7.4	.9	38.4	345	332	.962	332	1	331
1911	314	7.3	1.1	43.9	366	481	1.31	481	1	480
1912	412	10.6	2.4	54.1	479	467	.975	467	1	466
1913	360	7.6	2.2	51.6	421	479	1.14	479	1	478
1914	358	5.6	2.0	43.7	409	399	.976	399	28	371
1915	542	8.4	12.6	43.8	607	932	1.54	932	6	926
1916	851	17.5	62.1	60.9	992	1033	1.04	1033	1	1032
1917	923	10.7	49.8	45.1	1029	960	.933	960	3	957
1918	1218	9.4	19.9	31.9	1279	1810	1.42	1810	4	1806
1919	1879	9.6	17.2	30.2	1936	1896	.979	1896	6	1890
1920	1068	5.9	25.6	40.0	1140	949	.832	949	3	946
1921	654	2.0	57.0	32.0	745	788	1.06	788	1	787
1922	611	4.1	25.5	32.2	673	754	1.12	754	1	753
1923	715	4.9	43.6	39.1	803	1037	1.29	1037	2	1035
1924	774	5.0	48.9	35.8	864	767	.888	767	7	760
1925	492	7.6	19.5	25.3	544	578	1.06	578	9	569
1926	376	10.8	9.6	27.3	424	449	1.06	449	13	436
1927	256	12.2	4.3	24.4	297	344	1.16	344	22	322
1928	242	15.7	2.3	27.5	288	363	1.26	363	13	350
1929	244	14.5	3.4	36.3	298	407	1.37	407	9	398
1930						339		339	3	336
1931						224		224	4	220
1932						176		176	6	170
1933						202		202	3	199
1934						211		211	2	209
1935						136		136	11	125
1936						118		118	45	73
1937						114		114	80	34
1938						152		152	57	95
1939						192		192	45	147
1940						162		162	6	156
1941						483		483	12	471
1942						1200		1200	1	1199
1943						2113		2113	8	2105
1944						1714		1714	*	1714
1945						873		873	2	871
1946						480		480	*	480
1947						132		132	*	132
1948						85		85	1	84
1949						110		110	3	107
1950						110		110	33	77
1951						136		136	51	85
1952						154		154	71	83
1953						134		134	164	-30
1954						105		105	184	-79
1955						126		126	175	-49
1956						137		137	151	-14
1957						144		144	144	0

AC-15, SOURCES

COL. A

1870-80. Caroline Gries, *Foreign Trade of the United States, 1790-1929* (USDA, BAE, 1929), Report F.S. 44, Table 5, exports, bacon and hams.

1881-1929. *Ibid.*, exports of bacon plus .96 times exports of hams and shoulders and sides (to obtain dressed weight equivalent).

COL. B, *Ibid.*, Table 6, exports of canned pork times 1.82.

COL. C, *Ibid.*, Table 7, exports of fresh pork times 1.02.

COL. D, *Ibid.*, Table 8, exports of salted or pickled pork times .96.

COL. E, Sum, Col. A through Col. D.

COL. F

1899-1908. Preston Richards, *Trends in Production and Foreign Trade for Meats and Livestock in the U.S.* USDA Technical Bulletin No. 764 (March 1941).

1909-56. *Consumption of Food*, Table 54D, pork, excluding lard, exports, plus deliveries for lend-lease, UNRRA, etc.

1957. *The National Food Situation*, July 1958, p. 70.

COL. G, Ratio, Col. F/Col. E.

COL. H, Preferred series, exports

1870-98. Col. E, transcribed.

1899-1957. Col. F, transcribed.

COL. I, Preferred series, imports

1899-1908. Richards, *op. cit.*, Table 18, pork, excluding lard, imports.

1909-56. *Consumption of Food*, Table 54D, pork, excluding lard, imports.

1957. *The National Food Situation*, p. 70.

COL. J, Preferred series, net exports. Col. H minus Col. I.

AC-15, NOTES

* Less than 500,000 lb.

Conversion factors used in obtaining dressed weight equivalents of pork products in Cols. A-D are those referred to by Preston Richards, *op. cit.*, in a footnote to Table 18. They are obtainable from the Department of Agriculture as a worksheet entitled "Conversion Factors for Meats (Exports and Imports)," prepared by C. A. Burmeister and dated October 6, 1936.

All data in Cols. A-E are for years ended June 30.

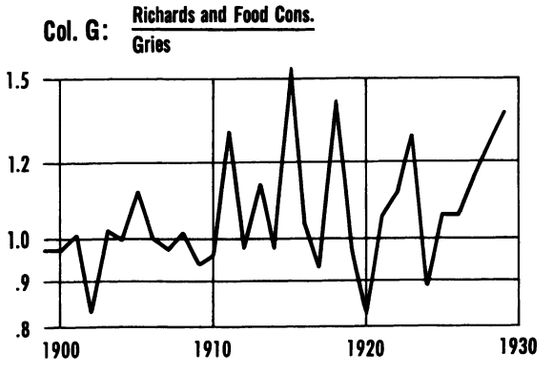
COL. A. Bacon was not separated from hams and shoulders until 1881. The conversion factor for bacon is 1.00, and since bacon accounted for about 90% of exports of bacon, hams, and shoulders in 1881-85, the factor of 1.00 has been used for 1870-80. Thereafter, the components have been factored separately and added.

COL. B. No data are available on canned pork prior to 1900. This will not significantly affect the total for those years.

COL. C. Fresh pork exports were included with "salted and pickled pork" exports prior to 1884.

COL. E. Exports of live hogs are available in the Gries series but not readily available in Richards or other sources for the years following 1929. Since the amount, in dressed weight terms, is less than 5% of total exports, they have not been included.

COLS. F and I. The Richards data, purportedly on a calendar year basis, actually appear to be the averages of consecutive fiscal years. *Consumption of Food* series are purportedly on a calendar year basis. Imports negligible prior to 1899.



COL. H. The chart shows the ratio of the Richards-*Consumption of Food* series to the series derived from Gries. The differences are due to calendar year-fiscal year coverage, shipments to noncontiguous territories, and re-exports. No adjustments can be made for the last two factors, and the annual fluctuations of the ratio are too severe to permit adjustments on the basis of the ratio. The trends and levels of the two series appear to be similar and a preferred series has been obtained by linking one series to the other without adjustment.

AC-16. PORK: Consumption

(billion pounds, dressed weight)

	Production	Net exports	Apparent consumption (Col. A minus Col. B)	Richards-Cons. of Food, total consumption	Col. D / Col. C	Preferred series
	A	B	C	D	E	F
1870	5.4	.06	5.3			5.3
1871	5.9	.11	5.8			5.8
1872	6.2	.30	5.9			5.9
1873	5.7	.46	5.2			5.2
1874	5.2	.42	4.8			4.8
1875	5.2	.30	4.9			4.9
1876	5.3	.38	4.9			4.9
1877	6.1	.53	5.6			5.6
1878	6.2	.66	5.5			5.5
1879	6.1	.81	5.3			5.3
1880	5.9	.85	5.0			5.0
1881	5.9	.85	5.0			5.0
1882	5.9	.54	5.4			5.4
1883	6.1	.45	5.7			5.7
1884	6.5	.45	6.1			6.1
1885	6.4	.47	5.9			5.9
1886	5.8	.50	5.3			5.3
1887	5.5	.50	5.0			5.0
1888	5.9	.43	5.5			5.5
1889	6.3	.46	5.8			5.8
1890	6.3	.68	5.6			5.6
1891	9.4	.68	8.7			8.7
1892	5.5	.66	4.8			4.8
1893	6.0	.52	5.5			5.5
1894	6.6	.58	6.0			6.0
1895	6.2	.62	5.6			5.6
1896	6.7	.62	6.1			6.1
1897	6.8	.73	6.1			6.1
1898	6.7	.95	5.8			5.8
1899	6.3	.94	5.4	5.37	.99	5.37
1900	6.4	.85	5.5	5.48	1.00	5.48
1901	6.2	.86	5.3	5.49	1.04	5.49
1902	5.9	.65	5.3	5.29	1.00	5.29
1903	6.3	.57	5.7	5.50	.96	5.50
1904	6.6	.58	6.0	5.80	.97	5.80
1905	6.7	.68	6.0	5.94	.99	5.94
1906	7.0	.73	6.3	6.06	.96	6.06
1907	7.2	.62	6.6	6.44	.98	6.44
1908	7.2	.64	6.6	6.90	1.05	6.90
1909	6.3	.49	5.8	6.06	1.04	6.06
1910	6.6	.33	6.3	5.76	.91	5.76
1911	7.0	.48	6.5	6.48	1.00	6.48
1912	6.7	.46	6.2	6.36	1.03	6.36
1913	6.9	.48	6.4	6.50	1.02	6.50
1914	7.0	.37	6.6	6.45	.98	6.45
1915	7.7	.93	6.8	6.69	.98	6.69
1916	7.7	1.03	6.7	7.04	1.05	7.04
1917	7.2	.96	6.2	6.09	.98	6.09
1918	8.3	1.81	6.5	6.38	.98	6.38
1919	8.0	1.89	6.1	6.71	1.10	6.71
1920	7.6	.95	6.7	6.77	1.01	6.77
1921	7.9	.79	7.1	7.03	.99	7.03
1922	9.0	.75	8.2	7.24	.88	7.24
1923	9.6	1.04	8.6	8.31	.97	8.31
1924	8.6	.76	7.8	8.45	1.08	8.45
1925	7.9	.57	7.3	7.73	1.06	7.73
1926	8.3	.44	7.9	7.53	.95	7.53
1927	9.2	.32	8.9	8.06	.91	8.06
1928	9.1	.35	8.8	8.54	.97	8.54
1929	8.7	.40	8.5	8.48	1.02	8.48
1930	8.5	.34	8.2	8.25	1.01	8.25
1931	9.3	.22	9.1	8.48	.93	8.48
1932	9.2	.17	9.0	8.82	.98	8.82
1933	9.3	.20	9.1	8.88	.98	8.88
1934	6.9	.21	6.7	8.14	1.21	8.14
1935	6.0	.12	5.9	6.16	1.04	6.16
1936	7.0	.07	6.9	7.06	1.02	7.06
1937	7.0	.03	7.0	7.18	1.03	7.18
1938	8.0	.10	7.9	7.55	.96	7.55
1939	9.6	.15	9.5	8.47	.89	8.47
1940	9.5	.16	9.3	9.70	1.04	9.70
1941	9.8	.47	9.3	9.18	.99	9.18
1942	11.8	1.20	9.8	9.27	.95	9.27
1943	13.1	2.10	11.0	11.50	1.05	11.50
1944	11.5	1.71	9.8	12.07	1.23	12.07
1945	10.6	.87	9.7	9.88	1.02	9.88
1946	10.5	.48	10.0	10.80	1.08	10.80
1947	10.2	.13	10.1	10.15	1.00	10.15
1948	10.2	.08	10.1	10.02	.99	10.02
1949	10.9	.10	10.8	10.17	.94	10.17
1950	11.3	.08	11.2	10.61	.95	10.61
1951	12.0	.08	11.9	11.35	.95	11.35
1952	11.0	.08	10.9	11.50	1.06	11.50
1953	9.4	-.03	9.4	10.20	1.09	10.20
1954	10.2	-.08	10.3	9.83	.95	9.83
1955	11.2	-.05	11.2	11.07	.99	11.07
1956	10.6	-.01	10.6	11.37	1.07	11.37
1957	10.4	.00	10.4	10.57	1.02	10.57

AC-16, SOURCES

COL. A, Production. Table AO-28, Col. I, times .56 (dressed weight/live weight ratio).

COL. B, Net exports. Table AC-15, Col. J.

COL. C, Apparent consumption. Col. A minus Col. B.

COL. D

1899-1908. Richards, *Trends in Production and Foreign Trade for Meats and Livestock in the U.S.*, Table 22, total pork consumption excluding lard.

1909-55. *Consumption of Food*, Table 54D, military and civilian, domestic disappearance.

1956-57. *The National Food Situation*, July 1958, p. 70.

COL. E, Ratio, Col. D/Col. C.

COL. F, Preferred series

1870-98. Col. C, transcribed.

1899-57. Col. D, transcribed.

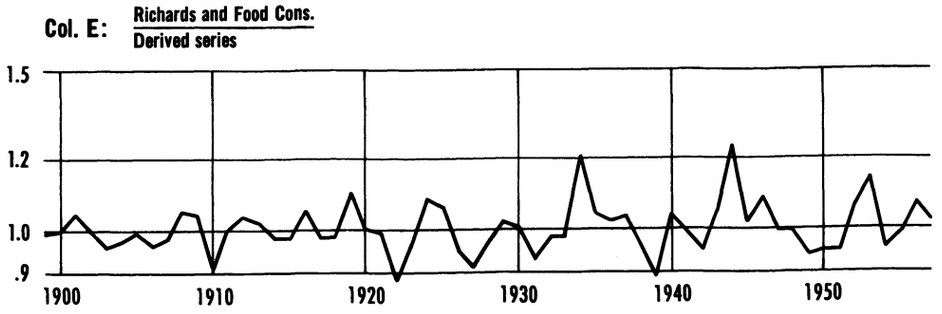
AC-16, NOTES

COL. A. See notes to Table AO-28 for discussion of other estimates of hog production. The series has been reduced from live weight to dressed weight by the factor of 56%. Richards (*op. cit.*, Table 20, fn.) used 55% to obtain dressed weight equivalent of net exports. W. N. Parker (see source cited in Table AO-28) used 57.7%. PMA, *Conversion Factors*, May 1952, Table 6, gives 56.6% as the average for 1947-49 and 56.1% as the average for 1950. Our choice of 56% appeared to be a reasonable compromise among the varying estimates.

COL. B. This series is for years ended June 30, through 1898. (All other data in the table are for calendar years.)

COL. D. For 1909-32 both sources present identical figures.

COL. E. The chart shows the ratio of the Richards *Consumption of Food* series to the derived series. The differences are largely due to differences in the production series (see Table AO-28 herein). Our Col. C refers to slaughter plus changes in inventory, while the *Consumption of Food* series uses slaughter without adjustment.



AC-17. CATTLE, BEEF, AND VEAL: Imports

(million pounds dressed weight equivalent)

	Cattle, live, imports	Fresh beef, imports	Col. A plus Col. B	Richards, beef & veal & cattle imports	Cons. of Food beef & veal imports	Census, imports of live cattle	Preferred series, imports
	A	B	C	D	E	F	G
1870	20						20
1871	22						22
1872	8.57	.572	9.14				9.1
1873	12.2	.462	12.7				12.7
1874	16.0	.532	16.5				16.5
1875	15.9	.440	16.3				16.3
1876	10.5	.331	10.8				10.8
1877	11.2	.216	11.4				11.4
1878	14.7	.164	14.9				14.9
1879	16.8	.152	17.0				17.0
1880	15.2	.177	15.4				15.4
1881	14.6	.166	14.8				14.8
1882	23.3	.325	23.6				23.6
1883	37.7	.472	38.2				38.2
1884	34.9	.303	35.2				35.2
1885	36.8	.418	37.2				37.2
1886	27.2	.319	27.5				27.5
1887	30.5	.399	30.9				30.9
1888	22.5	.356	22.9				22.9
1889	21.7	.204	21.9				21.9
1890	10.7	.162	10.9				10.9
1891	4.34	.160	4.50				4.5
1892	.759	.160	.919				.9
1893	1.15	.177	1.33				1.3
1894	.557	.140	.697				.7
1895	52.4	.423	52.8				52.8
1896	76.2	.605	76.8				76.8
1897	115	2.19	117				117
1898	102	.506	103				103
1899	69.9	.399	70.3	68			68
1900	63.4	.340	63.7	58			58
1901	51.1	.818	51.9	43			43
1902	33.6	.295	33.9	29			29
1903	23.2	.358	23.6	15			15
1904	5.62	.200	5.82	9			9
1905	9.75	.276	10.0	11			11
1906	10.2	.306	10.5	12			12
1907	11.3	.468	11.8	23			23
1908	32.3	.267	32.6	41			41
1909	48.4	.203	48.6	59	1.0		59
1910	68.6	.959	69.6	67	1.0		67
1911	64.0	.386	64.4	89	1.0		89
1912	111	1.03	112	133	3.0		133
1913	148	4.27	152	268	43.0		268
1914	304	182	486	526	280.0		526
1915	188	186	374	283	112		283
1916	154	71.8	226	172	22.0		172
1917	131	15.4	146	169	52.0		169
1918	103	24.7	128	504	376		504
1919	154	37.0	191	259	81.0		259
1920	201	42.9	244	219	61.0		219
1921	115	42.4	157	94	33.0		94
1922	53.0	28.3	81.3	113	40.0		113
1923	88.2	32.8	121	76	33.0		76
1924	54.2	25.4	79.6	87	37.0		87
1925	47.5	12.5	60.0	83	37.0		83
1926	75.2	18.5	93.7	130	76.0		130
1927	93.7	22.3	116	272	142		272
1928	192	48.1	240	326	190		326
1929	191	63.1	254	360	251		360
1930				186	136		186
1931				72	53.0		72
1932				84	63.0		84
1933				115	104		115
1934				128	118		128
1935				308	201		308
1936				354	226		354
1937				382	227		382
1938				325	200	126	325
1939				439	219	224	443
1940					168	178	346
1941					257	211	468
1942					212	193	405
1943					226	126	352
1944					190	90.8	281
1945					128	136	264
1946					20.0	145	165
1947					64	25.2	89
1948					356	179	535
1949					254	157	411
1950					348	162	510
1951					484	94.0	578
1952					429	48.6	478
1953					271	64.0	335
1954					226	36.6	263
1955					222	95.6	318
1956					204	44.0	248
1957					376	228	604

AC-17, SOURCES

COL. A, Caroline Gries, *Foreign Trade of the United States* (USDA, BAE, 1929), Report F.S. 45, pp. 9-13, cattle, live imports (head), times 700 (lb.) (years ending June 30).

COL. B, *Ibid.*, pp. 24-27, fresh beef imports, times 1.01.

COL. C, Sum of Cols. A and B.

COL. D, Richards, *Trends in Production and Foreign Trade for Meats and Livestock in the U.S.*, Table 17, total imports, beef and veal, and cattle.

COL. E

1909-56. *Consumption of Food*, Table 54A (beef) and 54B (veal), imports.

1957. *National Food Situation*, July 1958, p. 70.

COL. F

1938-55. Bureau of the Census, *Quarterly Summary of Foreign Commerce of the United States*, January-December issues for 1938-55, Table 5, item 0010 (lb.), imports of live cattle, times .547 to obtain dressed weight equivalent.

1956-57. *Ibid.*, Jan.-Dec. 1956, p. 21, and 1957, p. 20.

COL. G, Preferred series

1870-98. Col. C, transcribed.

1899-1938. Col. D, transcribed.

1939-57. Col. E plus Col. F.

AC-17, NOTES

COL. A. 1870 and 1871 imports not reported. The figures were derived by assuming (1) that cattle imports made up 25% of the value of all live animal imports (this was the average for 1872-74), and (2) that the average unit value of live cattle imports per head was five times the price of domestic cattle per cwt. (this was the average for 1872-74). The value of live cattle imports was derived as 25% of the total value for all live animal imports and then divided by the assumed price to get number of head. The number of head was multiplied by 350 to obtain dressed weight equivalent of live cattle imports—20 million lb. for 1870 and 22 million lb. for 1871. (See Table AC-18.)

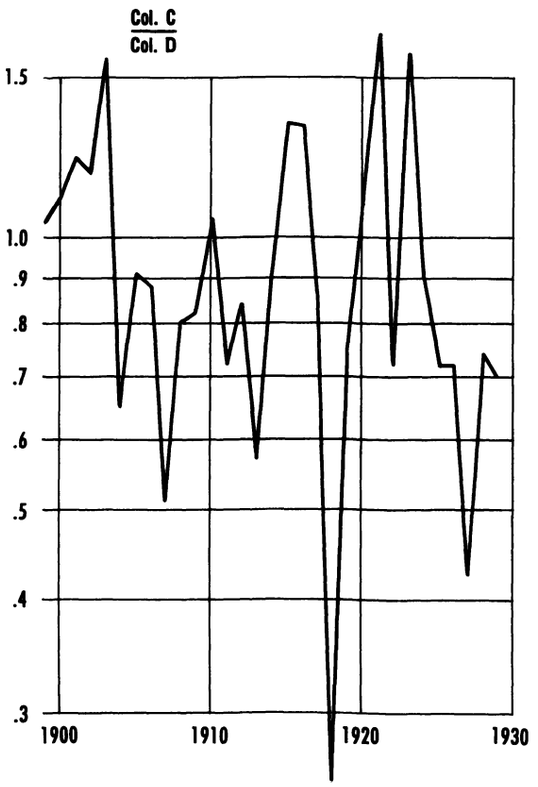
COL. B. Data on imports of canned beef and cured beef are not available for years prior to 1919 and 1923 respectively in the source volume—Gries, *op. cit.* Data on imports of fresh beef are not available for years prior to 1872, but are believed to be negligible.

COL. C. See notes to Table AC-18 for conversion factors used to obtain dressed weight equivalents of fresh beef and live cattle imports. The data are for fiscal years ended June 30.

COL. D. Purportedly for calendar years but actually appear for certain years to be averages of consecutive fiscal year data.

COLS. E. and F. For calendar years.

COL. G. The chart shows the ratio of our derived series to the Richards series. The fluctuations are largely due to calendar vs. fiscal years. There appears to be a slight difference in levels, but the severity of the fluctuations obscures the amount and prohibits an adjustment on the basis of the ratios. It is felt that ignoring whatever differences exist does not significantly affect the consistency of the preferred series.



AC-18. CATTLE, BEEF, AND VEAL: Exports

(million pounds dressed weight)

	Gries								
	Cattle, exports	Fresh beef, domestic exports	Pickled, salted, & other cured	Canned beef & veal exports	Total exports (Cols. A-D)	Richards, total exports	USDA, exports, commercial & deliveries	Census and AMS, exports of live cattle	Preferred series, exports
	A	B	C	D	E	F	G	H	I
1870	19.3		25.4	7.85	52.6				53
1871	14.4		41.8	5.20	61.4				61
1872	19.6		25.4	17.4	62.4				62
1873	24.8		30.1	14.4	69.3				69
1874	39.2		34.3	21.2	94.7				95
1875	40.0		45.9	18.4	104				104
1876	36.1		34.8	25.0	95.9				96
1877	35.0	49.7	37.3	98.5	220				220
1878	56.0	54.6	37.0	127	275				275
1879	95.7	54.6	35.2	190	376				376
1880	128	85.6	43.1	210	467				467
1881	130	107	38.7	149	425				425
1882	75.7	70.3	43.7	101	291				291
1883	73.1	81.9	39.7	104	299				299
1884	133	122	41.0	74.8	371				371
1885	95.1	117	46.4	101	360				360
1886	83.3	100	56.9	86.0	326				326
1887	74.5	84.4	34.7	108	302				302
1888	98.1	94.4	46.7	101	340				340
1889	144	139	52.6	128	464				464
1890	276	175	92.9	207	751				751
1891	262	196	87.5	274	820				820
1892	276	223	67.7	218	785				785
1893	201	208	56.5	198	664				664
1894	251	196	60.8	140	648				648
1895	232	193	60.3	160	645				645
1896	261	227	67.8	159	715				715
1897	275	293	65.4	135	768				768
1898	307	278	43.7	92.8	722				722
1899	273	285	45.8	96.0	700	768			768
1900	278	332	47.2	139	796	825			825
1901	321	355	53.4	134	863	847			847
1902	275	305	47.1	167	794	780			780
1903	282	257	51.3	191	781	878			878
1904	415	303	55.1	144	917	863			863
1905	397	239	53.4	167	856	935			935
1906	409	271	77.4	161	918	804			804
1907	296	284	60.6	39.5	680	674			674
1908	244	203	45.6	58.4	551	465			465
1909	145	124	42.6	37.2	349	324	203		324
1910	97.6	76.5	35.1	37.0	246	241	140		241
1911	105	42.9	38.4	27.1	213	213	124		213
1912	73.9	15.4	36.3	27.6	153	130	84		130
1913	17.3	7.44	24.6	17.1	66.4	82	67		82
1914	12.9	6.46	22.1	8.66	50.1	158	150		158
1915	3.84	172	30.3	188	394	527	518		527
1916	14.9	234	36.3	127	412	397	386		397
1917	9.37	199	55.3	169	433	499	488		499
1918	12.7	374	51.9	243	682	975	954		975
1919	29.6	336	42.9	271	680	450	406		450
1920	58.1	155	30.8	77.8	322	300	220		300
1921	102	21.3	22.2	26.9	172	184	85		184
1922	109	4.03	25.5	9.37	148	144	88		144
1923	43.0	4.06	23.0	5.78	75.8	109	90		109
1924	22.9	2.85	20.8	3.86	50.4	117	86		117
1925	73.9	3.18	21.3	4.59	103	122	81		122
1926	24.6	2.90	18.4	5.87	51.8	83	71		83
1927	14.9	2.10	17.9	7.49	42.4	80	69		80
1928	11.5	1.82	10.9	5.54	29.8	65	59		65
1929	5.98	2.59	9.46	5.06	23.1	68	64		68
1930						63	59		63
1931						60	58		60
1932						34	32		34
1933						41	39		41
1934						61	56		61
1935						54	53		54
1936						57	54		57
1937						54	51		54
1938						55	53	.574	55
1939						54	52	.265	52
1940							56	.210	56
1941							57	.225	57
1942							58	.184	58
1943							93	.272	93
1944							122	.907	123
1945							357	1.04	358
1946							671	2.01	673
1947							214	.744	215
1948							49	.280	49
1949							29	.643	30
1950							23	1.06	24
1951							20	.996	21
1952							30	1.79	32
1953							60	2.04	62
1954							64	2.01	66
1955							68	5.20	73
1956							117	6.31	123
1957							120	3.46	123

AC-18, SOURCES

COL. A, Caroline Gries, *Foreign Trade of the United States* (USDA, BAE, 1929), Report F.S. 45, pp. 9-13, cattle, live, exports (head), times 700 (lb.).

COL. B, *Ibid.*, pp. 24-27, fresh beef, domestic exports, times 1.01.

COL. C, *Ibid.*, pp. 29-31, beef, salted, pickled and other cured, domestic exports, times 0.952.

COL. D

1870-86. Worksheet 1 of this table, Col. G.

1887-1929. Gries, *op. cit.*, p. 21, times 2.50.

COL. E, Sum of Cols. A through D.

COL. F, Richards, *Trends in Production and Foreign Trade for Meats and Livestock in the U.S.*, Table 17, total exports.

COL. G

1909-55. *Consumption of Food*, Table 54A (beef) and Table 54B (veal), commercial exports and shipments plus Department of Agriculture deliveries.

1956-57. *The National Food Situation*, July 1958, p. 70.

COL. H

1938-55. Bureau of the Census, *Quarterly Summary of Foreign Commerce of the United States*, January-December issues for 1938-55, exports of other (than breeding) live cattle, number of head times 500 (lb.).

1956-57. *Livestock and Meat Statistics 1957*, AMS Statistical Bulletin 230, July 1958, Table 216, other cattle.

COL. I, Preferred series

1870-98. Col. E, transcribed.

1899-1938. Col. F, transcribed.

1939-57. Col. G plus Col. H.

AC-18, NOTES

COLS. A-D. Exports for live cattle and beef and veal products have been derived from data collected by Caroline Gries (*op. cit.*). The factors used in converting the data to dressed weight equivalents were those used by Richards (*op. cit.*).

The following table shows the years in which quantity data first became available, the factors used in converting the data to dressed weight equivalents, and the years for which import data were "imports for consumption" or "general imports." Re-exports, generally negligible, have not been deducted from general imports.

	1st year available	*Factor of conversion*	*Imports for consumption*	*General imports*
Canned beef				
Exports	1887	2.50		
Imports	1919	2.50	1919-29	
Fresh beef				
Exports	1877	1.01		
Imports	1872	1.01	1872-1913	1914-29
Salted, pickled				
Exports	1790	0.952		
Imports	1923	0.952	1923-28	1929
Live cattle				
Exports	1790	700 lb/head (for 1899-1920)*		
Imports	1872	350 lb/head	1872-83	1884-1929

* For 1921-39, Richards used a weight of 500 pounds per head. We continued the 700 lb. figure.

Imports of canned beef, although large in 1919, were considered negligible prior to that year. This assumption is known to be incorrect for 1914 (for which year value figures first became available), but 1914 was a highly unusual year because of the influence of the war.

Imports of salted, pickled, and other cured beef are believed to have been negligible prior to 1923.

Exports of canned beef are available in value terms but not in quantity terms prior to 1887. Average unit values of canned beef were extrapolated back to 1877 on the basis of average unit values of fresh beef and were assumed back to 1870 at 10¢ per pound. The derived average unit value series was divided into the value series to obtain an approximation of quantity. (See worksheet following.)

The factors used for converting numbers of live cattle to dressed weight equivalents were taken from Richards, *op. cit.*, footnote to Table 20. Richards referred to the work of C. A. Burmeister as the source for his other conversion factors. The Burmeister factors were never published but are obtainable from the Department of Agriculture. The worksheet is entitled "Conversion Factors for Meats (Exports and Imports)" and is dated October 6, 1936.

COLS. A-E. Fiscal year ended June 30.

COL. B. Fresh beef was included with pickled, salted, and other cured for 1870-1876.

COL. F. Purportedly on a calendar year basis; actually appears to be averages of consecutive fiscal years.

The data show exports of live cattle, beef and veal products, in dressed weight equivalents. For conversion factors used by Richards, see notes to Cols. A-D.

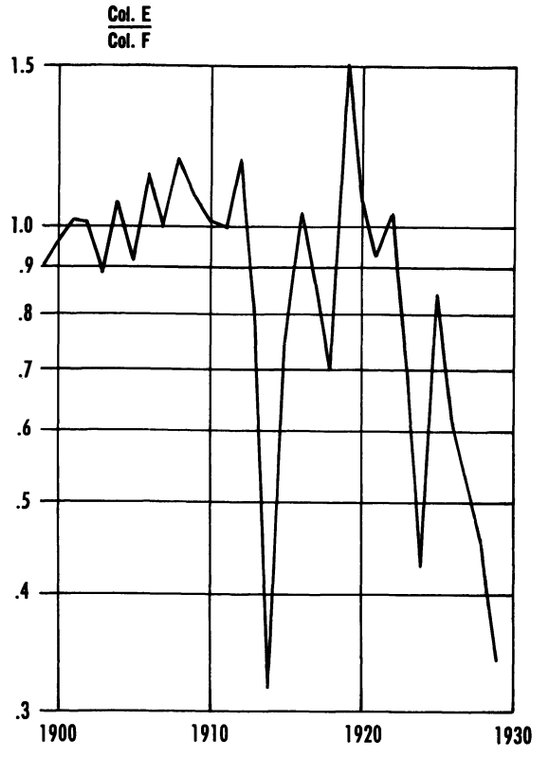
COL. G. Deliveries include shipments for UNRRA, Lend-Lease, CARE, and other foreign supply programs.

The series in *Consumption of Food* refers to exports of beef and veal products only and does not include estimates of foreign trade in live cattle. The data are for calendar years.

The exports of beef and veal products and imports of beef products are in absolute agreement with series in Preston Richards. The two series for imports of veal products show large differences, but the quantities are insufficient to affect seriously the total for beef and veal.

COL. H. Exports of live cattle are given only in numbers. These have been multiplied by 500 lb. to obtain dressed weight equivalent of live cattle exports. The factor for conversion has been taken from Richards, *op. cit.*, Table 20 footnote. The data are for calendar years.

COL. I. The ratio of the series derived from Gries to the Richards series is shown in the chart. Between 1909 and 1922, although there are severe fluctuations due to fiscal vs. calendar year data, there is little difference in level and none in trend. The reasons for the differences in 1923 and following years are not known.



AC-18, WORKSHEET 1. CANNED BEEF AND VEAL: Exports

	Gries						
	Canned beef exports, dressed wt. equiv. (mil. lb.)	Canned beef exports, value ($ mil.)	Canned beef, domestic exports, av. value (¢ per lb.)	Beef & veal, fresh, dom. exp., av. price (¢ per lb.)	Col. C / Col. D	Average price (¢ per lb.)	Col. B / Col. F × 2.50 (million)
	A	B	C	D	E	F	G
1870		.314				10.0	7.8
1871		.208				10.0	5.2
1872		.697				10.0	17.4
1873		.575				10.0	14.4
1874		.848				10.0	21.2
1875		.735				10.0	18.4
1876		.998				10.0	25.0
1877		3.94		9.3		10.0	98.5
1878		5.10		9.3		10.0	127
1879		7.31		9.0		9.6	190
1880		7.88		8.8		9.4	210
1881		5.97		9.3		10.0	149
1882		4.21		9.7		10.4	101
1883		4.58		10.3		11.0	104
1884		3.17		9.9		10.6	74.8
1885		4.21		9.7		10.4	101
1886		3.44		9.3		10.0	86.0
1887	108	3.46	8.04	8.7	.924	8.04	108
1888	101	3.34	8.25	8.8	.938	8.25	101
1889	128	4.38	8.57	8.3	1.03	8.57	128
1890	207	6.79	8.21	7.4	1.11	8.21	207
1891	274		8.3	7.9	1.05	8.3	
1892	218		9.0	8.2	1.10	9.0	
1893	198		9.1	8.6	1.06	9.1	
1894	140		9.1	8.6	1.06	9.1	
1895	160		8.9	8.8	1.01	8.9	
1896	159		8.8	8.4	1.05	8.8	
1897	135		8.6	7.8	1.10	8.6	
1898	92.8		8.8	8.4	1.05	8.8	
1899	96.0		9.1	8.3	1.10	9.1	

AC-18, Worksheet, SOURCES

Col. A, Caroline Gries, *Foreign Trade of the United States, 1790-1929* (USDA, Bureau of Agricultural Economics, 1929), "Cattle, Beef, and Beef Products" (Report F. S. 45), p. 21, canned beef, domestic exports, times 2.50 (to obtain dressed-weight equivalent).

Col. B, Total value. *Ibid.*

Col. C, *Ibid.*, p. 21, average value per pound, canned beef, domestic exports.

Col. D, *Ibid.*, p. 5, domestic exports, average price per pound, beef and veal, fresh.

Col. E, Ratio, Col. C/Col. D.

Col. F, Average price

1870-76. Assumed at .10/lb.

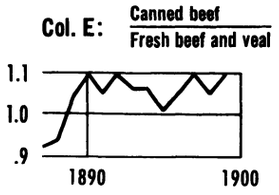
1877-86. Col. D times the average of the 1889-93 ratios (1.070.)

1887-99. Col. C, transcribed.

Col. G, Col. B divided by Col. F to obtain quantity of exports and multiplied by 2.50 to obtain dressed-weight equivalent.

AC-18, Worksheet, NOTES

All data are for years ended June 30.



AC-19, SOURCES

Col. A, Cattle, output. Strauss & Bean, Table 48, cattle, estimated slaughter, live weight, times .53.

Col. B, Calves, output. Strauss & Bean, Table 51, calves, estimated slaughter, live weight, times .55.

Col. C, Beef and veal exports. Table AC-18, Col. I.

Col. D, Beef and veal imports. Table AC-17, Col. G.

Col. E, Net imports of cattle. Table AC-17, Col. A, minus Table AC-18, Col. A.

Col. F, Apparent consumption. Col. A plus Col. B minus Col. C, plus Col. D minus Col. E.

Col. G

1899-1908. Richards, *Trends in Production and Foreign Trade for Meats and Livestock in the U.S.*, Table 21, total consumption.

1909-56. *Consumption of Food*, Table 54A (beef) plus B (veal), domestic disappearance.

1957. *National Food Situation*, July 1958, p. 70.

Col. H, Ratio, Col. G/Col. F.

Col. I, Preferred series

1870-98. Col. F, transcribed.

1899-1957. Col. G, transcribed.

AC-19, NOTES

Cols. A and B. Live weight slaughter estimates by Strauss & Bean have been multiplied by .53 for cattle and .55 for calves to obtain dressed weight equivalents. These factors were taken from PMA, *Conversion Factors.*

Col. E. Net imports of live cattle, which are included in Cols. C and D, have been deducted because the estimates in Cols. A and B are for slaughter and consequently include slaughter of imported cattle and exclude production of cattle for live exports.

The data are for years ended June 30.

Col. G. For the years of overlap, the Preston Richards series and the *Consumption of Food* series are identical.

Col. H. The column shows the ratio of the Preston Richards - *Consumption of Food* series to the series derived from slaughter and foreign trade data. The relationship is sufficiently close to permit linking one series directly to the other.

AC-19. BEEF AND VEAL: Consumption

(million pounds, dressed weight equivalent)

	Cattle, output, dressed weight	Calves, output, dressed weight	Beef and veal exports	Beef and veal imports	Cattle net imports	Apparent consumption, A+B-C+D-E	Total consumption	Col. G / Col. F	Preferred series, consumption (bil. lb.)
	A	B	C	D	E	F	G	H	I
1870	2514	68.2	53	20	+1	2548			2.55
1871	2609	77.6	61	22	+8	2640			2.64
1872	2702	86.9	62	9	-11	2747			2.75
1873	2775	96.2	69	13	-12	2827			2.83
1874	2870	108	95	17	-23	2923			2.92
1875	2928	117	104	16	-24	2981			2.98
1876	3007	126	96	11	-26	3074			3.07
1877	3121	140	220	11	-24	3076			3.08
1878	3308	154	275	15	-41	3243			3.24
1879	3494	173	376	17	-79	3387			3.39
1880	3672	182	467	15	-113	3515			3.52
1881	3787	195	425	15	-115	3687			3.69
1882	3911	201	291	24	-52	3897			3.90
1883	4070	219	299	38	-35	4063			4.06
1884	4297	229	371	35	-98	4288			4.29
1885	4546	252	360	37	-58	4533			4.53
1886	4776	266	326	28	-56	4800			4.80
1887	4949	286	302	31	-44	5008			5.01
1888	5145	296	340	23	-76	5200			5.20
1889	5219	312	464	22	-122	5211			5.21
1890	5315	317	751	11	-255	5157			5.16
1891	5336	329	820	5	-258	5107			5.11
1892	5193	320	785	1	-275	5004			5.00
1893	4945	303	664	1	-200	4786			4.79
1894	4660	284	648	1	-250	4547			4.55
1895	4482	271	645	53	-180	4340			4.34
1896	4470	271	715	77	-185	4288			4.29
1897	4606	290	768	117	-160	4405			4.40
1898	4847	314	722	103	-205	4748			4.75
1899	5480	370	768	68	-203	5353	5416	1.01	5.42
1900	5549	380	825	58	-215	5377	5501	1.02	5.50
1901	5793	403	847	43	-270	5662	5688	1.00	5.69
1902	5703	455	780	29	-241	5648	5624	.996	5.62
1903	6201	471	878	15	-259	6068	6202	1.02	6.20
1904	6153	471	863	9	-409	6179	6210	1.01	6.21
1905	6503	533	935	11	-387	6499	6529	1.00	6.53
1906	6577	574	804	12	-399	6758	6685	.989	6.68
1907	6646	600	674	23	-285	6880	6766	.983	6.77
1908	6689	611	465	41	-212	7088	7030	.992	7.03
1909	6959	635	324	59	-97	7426	7373	.993	7.37
1910	6758	641	241	67	-29	7254	7175	.989	7.18
1911	6641	639	213	89	-41	7197	7092	.985	7.09
1912	6355	636	130	133	+37	6957	6815	.980	6.82
1913	6265	584	82	268	+131	6904	6766	.980	6.77
1914	6106	547	158	526	+291	6730	6716	.998	6.72
1915	6185	565	527	283	184	6322	6259	.990	6.26
1916	6588	629	397	172	139	6853	6659	.972	6.66
1917	7420	718	499	169	122	7686	7432	.967	7.43
1918	7955	734	975	504	90	8128	7928	.975	7.93
1919	6959	785	450	259	124	7429	7286	.981	7.29
1920	6424	808	300	219	143	7008	7145	1.02	7.14
1921	6026	790	184	94	13	6713	6848	1.02	6.85
1922	6593	824	144	113	-56	7442	7361	.989	7.36
1923	6726	879	109	76	+45	7527	7590	1.01	7.59
1924	6943	933	117	87	+31	7815	7763	.993	7.76
1925	6991	947	122	83	-26	7925	7881	.994	7.88
1926	7118	906	83	130	+50	8021	8033	1.00	8.03
1927	6429	831	80	272	+79	7373	7359	.998	7.36
1928	5804	748	65	326	180	6633	6653	1.00	6.65
1929	5846	732	68	360	185	6685	6814	1.02	6.81
1930	5830	757					6815		6.82
1931	5846	784					6849		6.85
1932	5670	773					6652		6.65
1933	6270	843					7360		7.36
1934	7007	1015					9248		9.25
1935	6784	980					7857		7.86
1936	7463	1054					8817		8.82
1937	7054	1055					8215		8.22
1938							8052		8.05
1939							8150		8.15
1940							8238		8.24
1941							9288		9.29
1942							10142		10.1
1943							9669		9.67
1944							11057		11.1
1945							11389		11.4
1946							10508		10.5
1947							11881		11.9
1948							10826		10.8
1949							11031		11.0
1950							11065		11.1
1951							10286		10.3
1952							11167		11.2
1953							14180		14.2
1954							14833		14.8
1955							15286		15.3
1956							16141		16.1
1957							16112		16.1

AC-20. CHEESE: Net Imports

(million pounds)

	Vial, net imports	Cons. of Food, net imports	Col. B / Col. A	Preferred series, net imports
	A	B	C	D
1870	-57.6			-58
1871	-66.8			-67
1872	-62.0			-62
1873	-88.5			-88
1874	-91.5			-92
1875	-95.6			-96
1876	-97.5			-98
1877	-110			-110
1878	-137			-137
1879	-134			-134
1880	-134			-134
1881	-139			-139
1882	-99.1			-99
1883	-105			-105
1884	-105			-105
1885	-89.3			-89
1886	-79.7			-80
1887	-79.5			-80
1888	-73.1			-73
1889	-85.2			-85
1890	-81.6			-82
1891	-69.6			-70
1892	-74.1			-74
1893	-59.5			-60
1894	-60.2			-60
1895	-30.5			-30
1896	-33.3			-33
1897	-49.1			-49
1898	-29.9			-30
1899	-21.7			-22
1900	-39.9			-40
1901	-15.6			-16
1902	-.418			-.42
1903	.610			.61
1904	1.83			1.8
1905	15.9			16
1906	5.69			5.7
1907	22.3			22
1908	22.3			22
1909	33.1	33	.997	33
1910	40.2	40	.995	40
1911	30.4	30	.987	30
1912	44.6	45	1.01	45
1913	52.0	52	1.00	52
1914	50.8	50	.984	50
1915	-25.8	-25	.969	-25
1916	-27.4	-27	.985	-27
1917	-48.8	-49	1.00	-49
1918	-42.8	-42	.981	-42
1919	-5.0	-5	1.00	-5
1920	-6.56	-6	.915	-6
1921	11.7	12	1.03	12
1922	38.2	39	1.02	39
1923	52.8	53	1.00	53
1924	50.7	51	1.01	51
1925	49.2	49	.996	49
1926	70.9	71	1.00	71
1927	72.7	73	1.00	73
1928	76.7	76	.991	76
1929	71.7	71	.990	71
1930	64.4	64	.994	64
1931	58.1	58	.998	58
1932	52.0	53	1.02	53
1933	44.7	45	1.01	45
1934	43.6	44	1.01	44
1935	45.2	45	.996	45
1936	56.0	56	1.00	56
1937	56.8	57	1.00	57
1938	50.0	50	1.00	50
1939		55		55
1940		27		27
1941		-80		-80
1942		-289		-289
1943		-146		-146
1944		-292		-292
1945		-182		-182
1946		-191		-191
1947		-173		-173
1948		-70		-70
1949		-71		-71
1950		-3		-3
1951		-33		-33
1952		40		40
1953		33		33
1954		12		12
1955		-102		-102
1956		-124		-124
1957		-122		-122

AC-20, SOURCES

Col. A, E. E. Vial, *Production and Consumption of Manufactured Dairy Products* (USDA Technical Bulletin 722, April 1940), Table 8, imports minus exports and reexports, minus shipments to noncontiguous territories.

Col. B

1909-55. *Consumption of Food,* Table 60, imports, minus commercial exports and shipments, minus Department of Agriculture deliveries.

1956-57. *The National Food Situation,* July 1958, p. 71.

Col. C, Ratio, Col. B/Col. A.

Col. D, Preferred series

1870-1908. Col. A, transcribed.

1909-57. Col. B, transcribed.

AC-20, NOTES

Col. A. Imports on fiscal year basis up to 1884. General imports up to 1933, imports for consumption thereafter. Shipments to noncontiguous territories are interpreted as exports from continental United States and thus deducted from imports. Data on such shipments are not available for years prior to 1903.

Col. B. General imports up to 1933, imports for consumption thereafter. "Commercial exports and shipments" are the sum of exports to foreign countries and shipments to noncontiguous territories.

AC-21. CHEESE: Consumption

(million pounds)

	Vial, cheese consumption	Cons. of Food, domestic disappearance	Col. B / Col. A	Preferred series, consumption
	A	B	C	D
1870	123			123
1871	97			97
1872	125			125
1873	124			124
1874	114			114
1875	137			137
1876	117			117
1877	125			125
1878	167			167
1879	109			109
1880	135			135
1881	164			164
1882	162			162
1883	176			176
1884	169			169
1885	171			171
1886	165			165
1887	188			188
1888	213			213
1889	216			216
1890	237			237
1891	224			224
1892	244			244
1893	194			194
1894	196			196
1895	203			203
1896	207			207
1897	261			261
1898	251			251
1899	277			277
1900	284			284
1901	346			346
1902	317			317
1903	324			324
1904	333			333
1905	343			343
1906	298			298
1907	308			308
1908	335			335
1909	354	346	.977	346
1910	405	395	.975	395
1911	387	375	.969	375
1912	382	368	.963	368
1913	427	411	.963	411
1914	437	417	.954	417
1915	432	415	.961	415
1916	410	392	.956	392
1917	437	385	.881	385
1918	402	413	1.03	413
1919	442	446	1.01	446
1920	444	431	.971	431
1921	450	455	1.01	455
1922	472	468	.992	468
1923	489	502	1.03	502
1924	522	524	1.00	524
1925	537	543	1.01	543
1926	549	542	.987	542
1927	530	543	1.02	543
1928	535	532	.994	532
1929	562	573	1.02	573
1930	568	577	1.02	577
1931	555	562	1.01	562
1932	546	553	1.01	553
1933	565	570	1.01	570
1934	613	621	1.01	621
1935	669	675	1.01	675
1936	688	696	1.01	696
1937	712	716	1.01	716
1938	759	760	1.00	760
1939		776		776
1940		791		791
1941		791		791
1942		899		899
1943		765		765
1944		836		836
1945		892		892
1946		938		938
1947		993		993
1948		1027		1027
1949		1085		1085
1950		1167		1167
1951		1118		1118
1952		1193		1193
1953		1184		1184
1954		1278		1278
1955		1295		1295
1956		1341		1341
1957		1317		1317

AC-21, SOURCES

Col. A, E. E. Vial, *Production and Consumption of Manufactured Dairy Products,* Table 8, cheese consumption.

Col. B

1909-54. *Consumption of Food,* Table 60, domestic disappearance, military and civilian.

1955-57. *The National Food Situation,* July 1958, p. 71.

Col. C, Ratio, Col. B/Col. A.

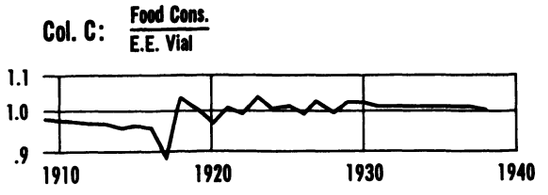
Col. D, Preferred series

1870-1908. Col. A, transcribed.

1909-57. Col. B, transcribed.

AC-21, NOTES

The differences in the series, shown in the chart, lie in the differences in production data from which consumption figures were estimated, and also (for 1916 and 1917) in stock estimates which were first included in Col. B in 1916 and in Col. A in 1918. The major reasons for the differences in production data are not known, but the differences are insufficient to warrant adjustments in levels.



AC-22. WOOL: Net Imports

	USDA, net imports (calendar year) (mil. lb.)	Stat. Abst., net imports (fiscal year) (mil. lb.)	Col. A / Col. B	Col. B linked to Col. A (ratio .9639)	Preferred series, net imports (mil. lb.)
	A	B	C	D	E
1870		66.7		64.3	64.3
1871		124		120	120
1872		78.4		75.6	75.6
1873		35.8		34.5	34.5
1874		51.2		49.4	49.4
1875		43.0		41.4	41.4
1876		39.0		37.6	37.6
1877		42.1		40.6	40.6
1878		34.8		33.5	33.5
1879		124		120	120
1880		50.4		48.6	48.6
1881		63.9		61.6	61.6
1882		66.5		64.1	64.1
1883		76.0		73.3	73.3
1884		67.4		65.0	65.0
1885		122		118	118
1886		107		103	103
1887		109		105	105
1888		123		119	119
1889		102		98.3	98.3
1890		126		121	121
1891		145		140	140
1892		168		162	162
1893		48.7		46.9	46.9
1894		199		192	192
1895		218		210	210
1896		342		330	330
1897		130		125	125
1898		62.6		60.3	60.3
1899		148		143	143
1900		99.8		96.2	96.2
1901		163		157	157
1902		174		168	168
1903		171		165	165
1904		247		238	238
1905		196		189	189
1906		200		193	193
1907		120		116	116
1908		263		254	254
1909		260		251	251
1910	171	129	1.326	124	171
1911	152	192	.792	185	152
1912	236	190	1.242	183	236
1913	148	246	.602	237	148
1914	250	293	.853	282	250
1915	392	529	.741	510	392
1916	437	368	1.188	355	437
1917	413	377	1.095	363	413
1918	447	421	1.062	406	447
1919	431	407	1.059	392	431
1920	234	307	.762	296	234
1921	313				313
1922	362				362
1923	364				364
1924	235				235
1925	329				329
1926	285				285
1927	253				253
1928	235				235
1929	275				275
1930	161				161
1931	156				156
1932	52				52
1933	174				174
1934	108				108
1935	200				200
1936	253				253
1937	322				322
1938	101				101
1939	243				243
1940	357				357
1941	817				817
1942	855				855
1943	648				648
1944	609				609
1945	776				776
1946	1036				1036
1947	628				628
1948	756				756
1949	419				419
1950	710				710
1951	555				555
1952	544				544
1953	447				447
1954	303				303
1955	355				355
1956	345				345
1957	274				274

AC-22, SOURCES

COL. A

1910-54. FAS Stat. Bull. 179, Table 260, apparel and carpet wool imports minus domestic exports (calendar years).

1955-56. *Ag. Stat. 1957*, p. 418-19.

1957. USDA, *Foreign Agricultural Trade*, 1957, Table 5, "Total wool, unmfd." less "Hair of: camel; alpaca, etc.; cashmere; angora."

COL. B, *Stat. Abstract 1905*, Table 100; *1911*, Table 281; and *1921*, Table 330: foreign retained for consumption minus exports of domestic (adjusted from year ending June 30 to year beginning July 1). (Source not indicated; Bureau of Foreign and Domestic Commerce published the *Abstract* in 1921.)

COL. C, Ratio, Col. A/Col. B.

COL. D, Col. B times the ratio of the sum of the 1910-20 figures in Col. A to the sum of the 1909-20 figures minus one-half of the sum of 1909 and 1920 figures in Col. B (ratio, .9639). (This links the fiscal year series to the calendar year series on the basis of an 11-year overlap.)

COL. E, Preferred series

1870-1909. Col. D, transcribed.

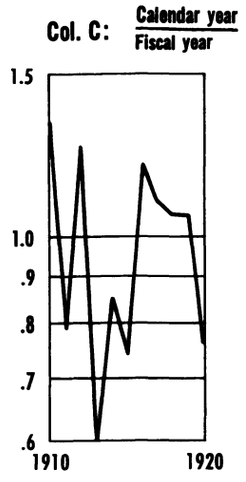
1910-57. Col. A, transcribed.

AC-22, NOTES

COL. A. Imports are for calendar years and are general imports less re-exports prior to 1933, and subsequently imports for consumption.

Domestic exports are for years ending June 30 for 1910 and 1913-15 (no data available for 1911-12) and for calendar years thereafter. The use of fiscal year data will not significantly distort the series because exports make up 2 percent of imports in 1915 and less than half of one percent of imports for the previous years.

All figures are given in actual weight terms, except exports for 1952-55, which are on a scoured basis.



AC-23. WOOL: Consumption

(million pounds)

	Meadows, consumption of fibers	Col. A, adjusted	Stat. Ab., apparent consumption, domestic & foreign wool	Col. B / Col. C	Preferred series, consumption
	A	B	C	D	E
1870			227		114
1871			274		137
1872			236		118
1873			206		103
1874			232		116
1875			235		118
1876			239		120
1877			250		125
1878			246		123
1879			357		179
1880			290		145
1881			336		168
1882			357		179
1883			376		188
1884			375		188
1885			424		212
1886			392		196
1887			378		189
1888			388		194
1889			378		189
1890			411		206
1891	225	217	439	.494	217
1892	259	250	471	.531	250
1893	180	174	347	.501	174
1894	307	296	509	.582	296
1895	267	257	490	.524	257
1896	344	332	601	.552	332
1897	157	151	397	.380	151
1898	161	155	335	.463	155
1899	196	189	437	.432	189
1900	198	191	402	.475	191
1901	229	221	480	.460	221
1902	258	249	461	.540	249
1903	233	225	462	.487	225
1904	262	253	542	.467	253
1905	269	259	495	.523	259
1906	256	247	499	.495	247
1907	219	211	431	.490	211
1908	271	261	591	.442	261
1909	322	310	581	.534	310
1910	265	255	448	.569	255
1911	282	272	496	.548	272
1912	262	253	486	.521	253
1913	356	343	536	.640	343
1914	328	316	578	.547	316
1915	476	459	817	.562	459
1916	373	360	650	.554	360
1917	(388)	(374)	676	(.553)	(374)
1918	410	395	720	.549	399
1919	341	329	685	.480	329
1920	326	314	580	.541	314
1921	355	342			343
1922	419	404			406
1923	434	418			422
1924	353	340			342
1925	361	348			350
1926	360	347			343
1927	369	356			354
1928	349	336			333
1929	385	371			368
1930	279	269			263
1931	327	315			311
1932	244	235			230
1933	332	320			317
1934	244	235			230
1935	433	417			417
1936	423	408			406
1937	398	384			381
1938	300	289			284
1939	415	400			396
1940	428	413			408
1941	671	647			648
1942	637	614			604
1943	659	635			636
1944	651	628			623
1945	669	645			645
1946	760	733			748
1947	716	690			701
1948	710	684			697
1949					503
1950					639
1951					487
1952					470
1953					496
1954					385
1955					415
1956					442
1957					369

AC-23, SOURCES

Col. A, Barkley Meadows, *Trends in the Consumption of Fibers in the United States, 1892-1948* (USDA Statistical Bulletin 89, Dec. 1950):

1891-1916. p. 28, mill consumption, scoured equivalent basis, wool, mohair, etc. (nomenclature adjusted from year ending June 30 to year beginning July 1).

1917. Interpolated estimate of calendar year consumption, based on data in Col. A for 1916 and in Col. C for 1917.

1918-48. p. 29; calendar years.

Col. B, Col. A times average 1919-28 ratio of Col. E/Col. A (average, .964).

Col. C, *Stat. Abstract 1905*, Table 100; *1911*, Table 281; and *1921*, Table 330: apparent consumption, greasy basis (nomenclature adjusted from year ending June 30 to year beginning July 1; no allowance for changes in stocks). (Sources not indicated in *Statistical Abstract*.)

Col. D, Ratio, Col. B/Col. C.

Col. E, Preferred series

1870-90. Col. C times the ratio of Col. B aggregates for 1891-1900 to Col. C aggregates for 1891-1900 (ratio, .500).

1891-1917. Col. B, transcribed.

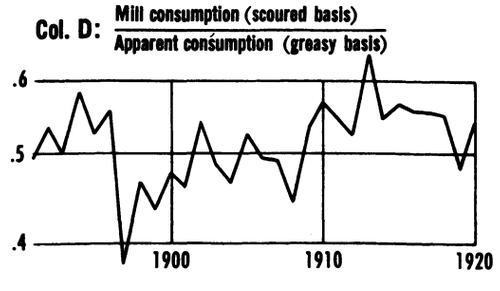
1918-56. USDA, *Wool Statistics and Related Data* (Statistical Bulletin 142 and Supplement for 1945-57), Table 68. Consumption of wool "on the cotton and other spinning systems" as given in footnote 1 of Table 70 is added for 1946-56.

1957. Supplement for 1959 to USDA, *Wool Statistics and Related Data through 1957*, Table 109.

AC-23, NOTES

Col. B. The ratio .964 results from the inclusion of mohair, alpaca, camel's hair, etc. in the data of Col. A, and its omission from the data of Col. E.

Col. D. The ratio in this column averages approximately .50 because scoured wool is approximately half as heavy as "greasy" wool as it is shorn. The irregularity of the ratio is due to the failure of the Col. C series to take changes in stocks into account.



Col. E. The series represents scoured apparel wool put into process, excluding mohair and other nonsheep fibers. Beginning in 1946, Census (the principal source) gave consumption on the woolen and worsted systems of spinning only and excluded the amount of apparel wool consumed by the cotton spinning system and by hat, felt, and miscellaneous manufacturers.

AC-24. COFFEE: Consumption

(million pounds)

	Domestic disappearance	Net imports	Col. A / Col. B	Preferred series, consumption
	A	B	C	D
1870		231.2		231.2
1871		312.7		312.7
1872		295.3		295.3
1873		286.4		286.4
1874		281.9		281.9
1875		311.1		311.1
1876		330.9		330.9
1877		321.7		321.7
1878		297.1		297.1
1879		362.8		362.8
1880		440.1		440.1
1881		423.3		423.3
1882		435.6		435.6
1883		478.5		478.5
1884		508.6		508.6
1885		539.3		539.3
1886		537.2		537.2
1887		500.8		500.8
1888		408.6		408.6
1889		561.1		561.1
1890		490.2		490.2
1891		511.0		511.0
1892		629.7		629.7
1893		551.4		551.4
1894		547.1		547.1
1895		643.2		643.2
1896		572.7		572.7
1897		724.6		724.6
1898		851.7		851.7
1899		801.8		801.8
1900		748.8		748.8
1901		811.2		811.2
1902		1057		1057
1903		874.4		874.4
1904		963.6		963.6
1905		1009		1009
1906		834.7		834.7
1907		975.0		975.0
1908		875.0		875.0
1909		1037		1037
1910	848	860.4	.986	848
1911	784	870.0	.901	784
1912	1031	880.6	1.171	1031
1913	872	858.9	1.015	872
1914	914	992.6	.9208	914
1915	1064	1055	1.008	1064
1916	1171	1128	1.038	1171
1917	1252	1265	.990	1252
1918	1051	1080	.973	1051
1919	1241	959.2	1.293	1241
1920	1245	1360	.915	1245
1921	1304	1308	.997	1304
1922	1296			1296
1923	1415			1415
1924	1395			1395
1925	1225			1225
1926	1456			1456
1927	1448			1448
1928	1439			1439
1929	1481			1481
1930	1540			1540
1931	1612			1612
1932	1553			1553
1933	1603			1603
1934	1559			1559
1935	1709			1709
1936	1760			1760
1937	1714			1714
1938	1934			1934
1939	1955			1955
1940	2049			2049
1941	2146			2146
1942	2068			2068
1943	1914			1914
1944	2449			2449
1945	2631			2631
1946	2778			2778
1947	2490			2490
1948	2700			2700
1949	2845			2845
1950	2497			2497
1951	2677			2677
1952	2655			2655
1953	2711			2711
1954	2413			2413
1955	2536			2536
1956	2631			2631
1957	2675			2675

AC-24, SOURCES

COL. A

1910-52. *Consumption of Food,* Table 96, domestic disappearance (military and civilian) in terms of green coffee beans.

1953-57. *The National Food Situation,* July 1958, p. 78.

COL. B, Net imports, year ending June 30.

1870-97. *Stat. Abstract 1897,* p. 304.

1897-1910. *Stat. Abstract 1911,* p. 568.

1910-21. *Stat. Abstract 1921,* p. 608.

COL. C, Ratio, Col. A/Col. B.

COL. D, Preferred series

1870-1909. Col. B, transcribed; years ending June 30.

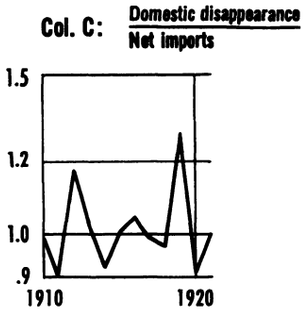
1910-57. Col. A, transcribed; calendar years.

AC-24, NOTES

COL. A. The data represent imports plus or minus changes in commercial stocks and Department of Agriculture stocks.

COL. B. The figures represent net imports for fiscal years, with no adjustments for changes in stocks.

COL. C. The chart shows the ratio of calendar year data, adjusted for changes in stocks, to unadjusted fiscal year data. The overall trend is not significantly affected by joining one series to the other.



AC-25. COCOA: Consumption

	Cocoa beans (million lb.)
	A
1909	121
1910	114
1911	133
1912	150
1913	152
1914	167
1915	190
1916	234
1917	377
1918	342
1919	366
1920	310
1921	294
1922	334
1923	387
1924	372
1925	359
1926	421
1927	395
1928	351
1929	479
1930	370
1931	419
1932	404
1933	436
1934	438
1935	606
1936	643
1937	509
1938	454
1939	616
1940	636
1941	626
1942	575
1943	557
1944	669
1945	639
1946	598
1947	599
1948	556
1949	619
1950	702
1951	639
1952	631
1953	661
1954	625
1955	618
1956	694
1957	700

AC-25, SOURCES

COL. A

1909-52. *Consumption of Food,* Table 98, domestic disappearance (military and civilian) of cocoa products and cocoa beans on a bean-equivalent basis.

1953-57. *The National Food Situation,* July 1958, p. 78.

AC-25, NOTES

The series is based upon general imports minus re-exports with adjustments for changes in commercial stocks and Department of Agriculture purchases.

AC-26. RUBBER: Imports

(million pounds)

	India rubber	Jelutong	Gutta percha	Balata	Guayule	Sum, Col. A-E	Ag. Stat., imports	Bus. Stat. & Stat. Ab., imports	Col. H / Col. G	Preferred series
	A	B	C	D	E	F	G	H	I	J
1870	11.0					11.0				11
1871	11.8					11.8				12
1872	14.5					14.5				14
1873	14.2					14.2				14
1874	12.0					12.0				12
1875	10.6					10.6				11
1876	13.8					13.8				14
1877	12.5					12.5				12
1878	14.9					14.9				15
1879	16.8					16.8				17
1880	20.0					20.0				20
1881	22.7					22.7				23
1882	21.6					21.6				22
1883	24.6					24.6				25
1884	24.2					24.2				24
1885	29.3					29.3				29
1886	28.6					28.6				29
1887	36.6					36.6				37
1888	32.3					32.3				32
1889	33.8					33.8				34
1890	33.7		1.0			34.7				35
1891	40.0		.3			40.3				40
1892	41.5		.6			42.1				42
1893	33.8		.5			34.3				34
1894	39.7		1.3			41.0				41
1895	36.8		3.8			40.6				41
1896	35.6		1.1			36.7				37
1897	46.1		.6			46.7				47
1898	51.1	6.5	.5			58.1				58
1899	49.4	8.7	.4			58.5				58
1900	55.3	9.4	.3			65.0				65
1901	50.4	16.9	.5			67.8				68
1902	55.0	14.0	.3			69.3				69
1903	59.0	14.9	.4			74.3				74
1904	67.2	19.1	.7			87.0				87
1905	57.8	21.4	.5	.4		80.1				80
1906	77.0	28.4	.5	.8		106.7				107
1907	62.2	22.8	.2	.6		85.8				86
1908	88.4	24.8	.3	1.2		114.7				115
1909	101.0	52.4	.8	.4		154.6	155			155
1910	72.0	51.4	1.6	.9	19.7	145.6	146			146
1911	110.2	48.8	1.2	1.5	14.2	175.9	176			176
1912	113.4	45.3	.5	1.3	10.2	170.7	171			171
1913	132.0	24.9	1.8	1.5	1.5	161.7	162	116	.72	162
1914	172.1	14.9	1.6	2.5	5.1	196.2	196	143	.73	196
1915							304	221	.73	304
1916							365	269	.74	365
1917							415	406	.98	415
1918							422	325	.77	422
1919							661	535	.81	661
1920							371	567	1.53	371
1921							579	415	.72	579
1922							810	675	.83	810
1923							634	694	1.09	634
1924							824	737	.89	824
1925							963	890	.92	963
1926							993	925	.93	993
1927							959	954	.99	959
1928							1252	978	.78	1252
1929							1158	1266	1.09	1158
1930							1049	1091	1.04	1049
1931							1098	1124	1.02	1098
1932							789	930	1.18	789
1933							1222	938	.77	1222
1934							982	1038	1.06	982
1935							1034	1046	1.01	1046
1936							1215	1093	.90	1093
1937							1246	1344	1.08	1344
1938							963	922	.96	922
1939							1419	1118	.79	1118
1940							2141	1833	.86	1833
1941							1824	2306	1.26	2306
1942							150	632	4.21	632
1943							167	134	.80	134
1944							320	255	.80	255
1945							450	333	.74	333
1946							1458	863	.59	863
1947							1526	1594	1.04	1594
1948							1615	1648	1.02	1648
1949							1602	1478	.92	1478
1950							1770	1798	1.02	1798
1951								1645		1645
1952								1804		1804
1953								1451		1451
1954								1338		1338
1955								1428		1428
1956								1297		1297
1957								1239		1239

AC-26, SOURCES

COLS. A-E (1870-1914), Various *Statistical Abstracts;* table, "Merchandise imported: quantities and values, by articles" changed from years ending June 30 to years beginning July 1.

COL. F, Sum of Cols. A through E.

COL. G, *Ag. Stat. 1934,* p. 665, and *1952,* p. 567.

COL. H

1913-29. *Bus. Stat. 1938,* p. 148, converted from monthly averages in long tons to annual figures in pounds.

1930-55. *Bus. Stat. 1957,* p. 182, imports including latex and guayule times 12 (to convert from monthly to annual basis) (source: Rubber Manufacturers Association and government agencies).

1956-57. *Stat. Abstract 1958,* Table 1058, p. 807.

COL. I, Ratio, Col. H/Col. G.

COL. J, Preferred series

1870-1909. Col. F, transcribed.

1910-34. Col. G, transcribed.

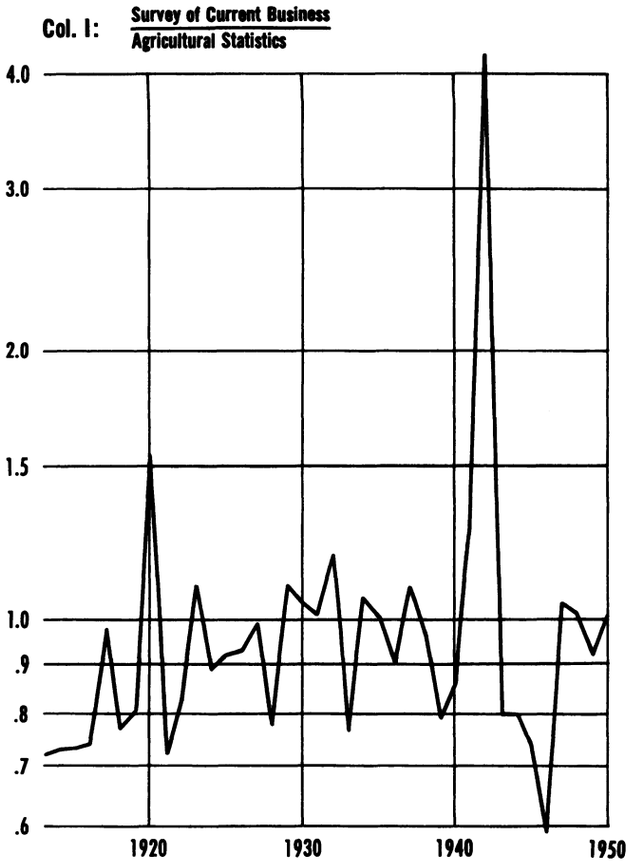
1935-57. Col. H, transcribed.

AC-26, NOTES

COL. A. Prior to 1910, guayule gum was included in India rubber.

COL. H. This excludes balata, jelutong, pontianak, gutta percha, and other guttas.

COL. J. The period 1870-1934 is on the basis of years beginning July 1. 1935-55 is on a calendar year basis. The chart shows the ratio of years beginning July 1 to calendar years as listed in Col. I. The upward trend of the ratio before 1930 represents the decreasing significance of the imports of jelutong, gutta percha, and other guttas, which are not included in the *Business Statistics* series.



Agriculture:
Employment and Employment/Output Ratio
(AL)

AL-1. AGRICULTURE: Employment

(thousand workers)

	Bur. Ag. Ec., total farm employment	AMS, total farm employment	Col. B / Col. A	BLS & MRLF agricultural employment	Col. D / Col. B	OBE, farm production workers	Carson (Census)	Preferred series, farm workers
	A	B	C	D	E	F	G	H
1870							6430	6291
1880							8607	8421
1890							9994	9778
1900							10705	10474
1909	12209							
1910	12146	13555	1.12				11343	11098
1911	12042	13539	1.12					11085
1912	12038	13559	1.13					11102
1913	12033	13572	1.13					11112
1914	12000	13580	1.13					11119
1915	11981	13592	1.13					11129
1916	12016	13632	1.13					11161
1917	11789	13568	1.15					11109
1918	11348	13391	1.18					10964
1919	11106	13243	1.19					10843
1920	11362	13432	1.18				11117	10998
1921	11412	13398	1.17					10970
1922	11443	13337	1.16					10920
1923	11385	13162	1.16					10777
1924	11362	13031	1.15					10669
1925	11448	13036	1.14					10673
1926	11534	12976	1.12					10624
1927	11246	12642	1.12					10351
1928	11379	12691	1.12					10391
1929	11289	12763	1.13	10450	.819	8969		10450
1930	11173	12497	1.12	10340	.827	8756	10484	10340
1931	11159	12745	1.14	10290	.807	8766		10290
1932	11069	12816	1.16	10170	.794	8654		10170
1933	11023	12739	1.16	10090	.792	8722		10090
1934	10852	12627	1.16	9900	.784	8816		9900
1935	11131	12733	1.14	10110	.794	8929		10110
1936	11047	12331	1.12	10000	.811	8852		10000
1937	10892	11978	1.10	9820	.820	8615		9820
1938	10789	11622	1.08	9690	.834	8318		9690
1939	10740	11338	1.06	9610	.848	8058		9610
1940	10585	10979	1.04	9540	.869	7832	9276	9540
1941	10361	10669	1.03	9100	.853	7730		9100
1942	10397	10504	1.01	9250	.881	7558		9250
1943	10263	10446	1.02	9080	.869	7364		9080
1944	10037	10219	1.02	8950	.876	7084		8950
1945	9844	10000	1.02	8580	.858	6899		8580
1946	11092	10295	.928	8320	.808	6838		8320
1947	11166	10382	.930	8266	.796	6785		8266
1948	11080	10363	.935	7973	.769	6747		7973
1949	10756	9964	.926	8026	.805	6554		8026
1950	10351	9926	.959	7507	.756	6284		7507
1951	10022	9546	.952	7054	.739	5867		7054
1952	9758	9149	.938	6805	.744	5715		6805
1953		8864		6562	.740	5595		6562
1954		8639		6504	.753	5588		6504
1955		8364		6730	.805	5468		6730
1956		7820		6585	.842	5269		6585
1957		7577		6229	.822	5105		6229

AL-1, SOURCES

COL. A, *Hist. Stat. 1949,* series E-61 (source, Bureau of Agricultural Economics, old series).

COL. B, AMS, *Farm Employment* (Statistical Bulletin 236), Table 3 (new USDA series).

COL. C, Ratio, Col. B/Col. A.

COL. D, Council of Economic Advisers, *Economic Report of the President 1959,* p. 158 (sources, 1929-39, U. S. Department of Labor; 1940-57, Bureau of the Census, *Monthly Report on the Labor Force* and decennial census).

COL. E, Ratio, Col. D/Col. B.

COL. F

1929-47. *Nat. Income* suppl., Table 28 (source, Office of Business Economics).

1948-57. *U.S. Income and Output,* p. 214, Table VI-16.

COL. G, Daniel Carson, "Industrial Composition of Manpower," in *Studies in Income and Wealth,* Vol. XI (National Bureau of Economic Research, New York, 1949), p. 47 (1940 adjusted by ratio of Carson's two 1930 figures).

COL. H, Preferred series

1870-1900. Col. G, linked to Col. H at 1910.

1910-28. Col. B, linked to Col. D at 1929.

1929-57. Col. D, transcribed.

AL-1, NOTES

Statistics of agricultural employment are among the most uncertain, because of the large numbers engaged in part-time, seasonal, and casual labor, and the considerable child and family labor; these are in addition to problems that are involved in any industry employment count, viz., definition of employment, definition of the industry, methods of sampling or enumerating, etc.

The Department of Agriculture estimates are high because:

(1) They count workers who spend *one hour* or more during a week on farm business ("family" workers, 15 hours or more); Census of Occupations figures, as well as those of the *Monthly Report on the Labor Force,* count workers in the occupations in which they spend the most time. This factor may raise the Department of Agriculture estimates by half a million or more relative to Census and MRLF, according to the Department of Agriculture.

(2) Workers who spend time on more than one farm are counted by the USDA on each farm on which they work; this makes USDA estimates higher by at least ¼ million than those of the *Monthly Report on the Labor Force,* which counts each worker only once.

(3) Children under 14 are counted by USDA but not by MRLF; this difference may be as large as 2 million in the summer.

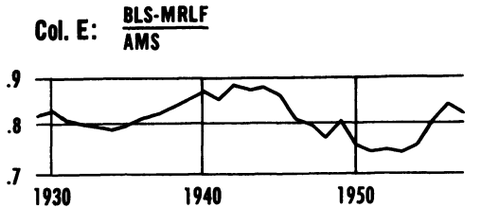
(4) Imported foreign workers and some migratory workers (not in private households) are counted by USDA but not by MRLF.

The Department of Agriculture omits some, however, such as bookkeepers and typists, who work on farms but not at "farm work." (Source for the above comments, USDA, *Farm Labor* Bulletin, Oct. 9, 1953, pp. 3-5.)

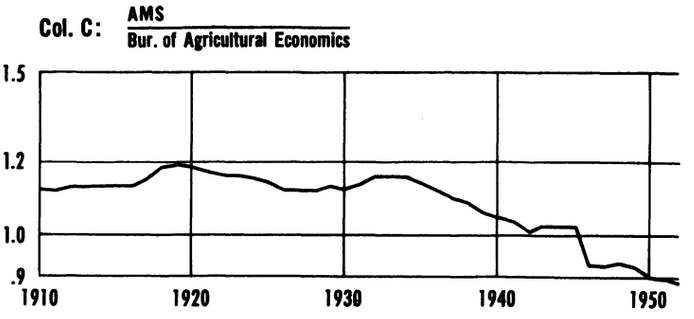
The Department of Commerce Office of Business Economics follows an opposite course in its national income data, by estimating "full-time equivalent" number of workers and by omitting unpaid family workers (*Nat. Income* suppl., Table 28).

These employment data are unsatisfactory as a measure of labor input. Clearly, the Department of Agriculture counts too many, while OBE counts too few. The MRLF data seem like the best approximation, though they understate on children.

It is not apparent what effect the shortcomings of the various series have on the *trend* of labor input estimates. However, the three current series given here have similar trends from 1929 to 1957: The BLS-MRLF and USDA series decline 40%, or 1.8% per year; the Commerce OBE series (Col. F) declines 43%, or 2.0% per year for the 29-year period. Both are close in trend to the Census data, as adjusted by Carson. Ratios between the BLS-MRLF data and the USDA (AMS) series are shown in the Col. E chart.



It is interesting to note, however, that the old USDA series differs from the new by much more than the above modest discrepancies. From 1929 to 1952 (when it was revised) the old series fell by only 14%, while the revised series shows a drop of 32%. For 1910-52, the old series declined only 20%, while the new declines 36%. The Col. C chart visualizes these changes.



Clearly, the "errors" in the older Department of Agriculture data were greater than the differences in trend (not level) observed in different concepts of employment and differences in methods of collecting data.

The series in the table below show the wide range of absolute values for quantities of labor input, as estimated by a careful scholar for the period 1900-49. Col. B represents adjusted Census estimates of numbers of persons employed; Col. C is further adjusted to full time equivalent employment (with reductions for seasonal work and part time family and other labor); Col. D also applies factors to take account of the lesser productivity of the labor of children, youth, the aged, women, etc. Col. A is the same as Col. H of Table AL-1.

Farm Employment (millions)

	(A)	(B)	(C)	(D)	(D)/(B)
1900	10.5	10.9	8.1	6.2	.57
1910	11.1	11.6	9.2	6.6	.57
1920	11.0	11.4	9.0	6.6	.58
1930	10.3	10.5	8.4	6.2	.59
1940	9.5	9.8	8.0	6.0	.61
1949	8.0	8.3	6.8	5.0	.60

Source: Procter Thomson, *Productivity of the Human Agent in Agriculture* (Ph.D. dissertation, University of Chicago, 1951), Appendix, Table 10. (Thomson's estimates are annual; we reproduce here only the tenth years, for comparison.)

The ratios in the last column indicate that, while the absolute level of labor input is considerably altered by adjustment to full-time man-equivalent units, the ratio of 1949 to 1900 labor input is altered only a little over 5%.

AL-2. AGRICULTURE: Employment/Output

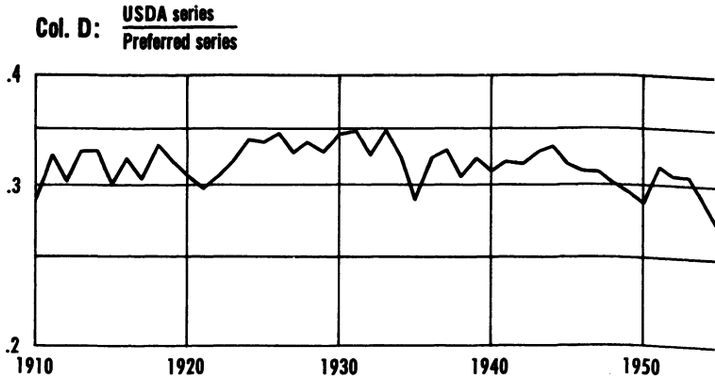
	Farm employment (mil.)	Farm output ($ bil., 1954 prices)	Alternative employment/ output series	Col. C / Col. E × 10	Preferred series, employment/ output, Col. A / Col. B
	A	B	C	D	E
1870	6.29	6.0			1.048
1871		6.1			
1872		6.6			
1873		6.5			
1874		6.4			
1875		6.9			
1876		7.0			
1877		7.9			
1878		8.2			
1879		8.5			
1880	8.42	8.8			.957
1881		8.2			
1882		9.2			
1883		9.1			
1884		9.9			
1885		9.7			
1886		9.7			
1887		9.6			
1888		10.0			
1889		10.5			
1890	9.78	10.4			.940
1891		12.4			
1892		9.8			
1893		9.9			
1894		10.7			
1895		11.0			
1896		12.0			
1897		12.7			
1898		13.4			
1899		13.2			
1900	10.47	13.3			.787
1901		13.2			
1902		13.4			
1903		13.6			
1904		14.2			
1905		14.0			
1906		15.0			
1907		14.2			
1908		14.7			
1909		14.2			
1910	11.10	14.5	.0222	.290	.766
1911	11.08	15.5	.0232	.324	.715
1912	11.10	15.8	.0213	.303	.703
1913	11.11	15.7	.0232	.328	.708
1914	11.12	16.9	.0217	.330	.658
1915	11.13	16.4	.0204	.300	.679
1916	11.16	15.7	.0222	.312	.711
1917	11.11	15.7	.0217	.306	.708
1918	10.96	16.8	.0217	.333	.652
1919	10.84	16.3	.0213	.320	.665
1920	11.00	16.6	.0204	.308	.663
1921	10.97	15.3	.0213	.297	.717
1922	10.92	16.8	.0200	.308	.650
1923	10.78	17.2	.0200	.319	.627
1924	10.67	17.7	.0204	.338	.603
1925	10.67	17.6	.0204	.337	.606
1926	10.62	18.6	.0196	.343	.571
1927	10.35	17.9	.0189	.327	.578
1928	10.39	18.9	.0185	.336	.550
1929	10.45	18.5	.0185	.327	.565
1930	10.34	18.8	.0189	.344	.550
1931	10.29	20.1	.0178	.348	.512
1932	10.17	18.6	.0178	.325	.547
1933	10.09	18.3	.0192	.348	.551
1934	9.90	16.0	.0200	.323	.619
1935	10.11	16.7	.0175	.289	.605
1936	10.00	17.1	.0189	.323	.585
1937	9.82	20.1	.0161	.329	.489
1938	9.69	19.1	.0156	.308	.507
1939	9.61	19.8	.0156	.322	.485
1940	9.54	20.1	.0149	.314	.475
1941	9.10	20.6	.0141	.319	.442
1942	9.25	23.0	.0128	.318	.402
1943	9.08	23.3	.0128	.328	.390
1944	8.95	24.1	.0123	.331	.371
1945	8.58	22.8	.0119	.316	.376
1946	8.32	23.6	.0110	.312	.353
1947	8.27	23.5	.0109	.310	.352
1948	7.97	25.0	.0096	.301	.319
1949	8.03	24.6	.0096	.294	.326
1950	7.51	24.1	.0089	.285	.312
1951	7.05	25.2	.0088	.314	.280
1952	6.80	26.6	.0079	.308	.256
1953	6.56	26.4	.0076	.306	.248
1954	6.50	26.2	.0071	.286	.248
1955	6.73	26.9	.0067	.268	.250
1956	6.58	27.4	.0063	.262	.240
1957	6.23	26.1	.0059	.247	.239

AL-2, SOURCES

Col. A, Farm employment. Table AL-1, Col. H, transcribed.
Col. B, Farm output. Table AO-1, Col. G, transcribed (1954 price weights).
Col. C, Labor/output series, USDA, Agricultural Research Service, *Changes in Farm Production and Efficiency* (Statistical Bulletin 233, revised Sept. 1959), Table 17, index numbers of farm production per man-hour, reciprocals of Column 1.
Col. D, Ratio, Col. C/Col. E.
Col. E, Preferred series, employment/output, all agriculture. Col. A/Col. B.

AL-2, NOTES

Col. C. This is the principal published series on productivity in agriculture; and this source provides the only published estimates of labor productivity by type of crop and animal (cf. Tables AL-3 and AL-4, below). The Col. D chart shows the closeness of correspondence between these methods of estimating the decline in the agricultural labor input/output ratio. It may also be regarded as a measure of the adjustment which might be made in the figures of Tables AL-3 and AL-4 to make them congruent with those of Col. E of this table.



AL-3. CROPS: Employment/Output

AL-3, SOURCES

COLS. A-J, Agricultural Research Service, *Changes in Farm Production and Efficiency*, September 1959, pp. 22-23, reciprocals of farm production per man-hour times 100.

AL-3, NOTES

These data from the Agricultural Research Service are all that are available by commodity.

(1947-49 = 100)

	Feed grains	Hay and forage	Food grains	Vegetables	Fruits and nuts	Sugar crops	Cotton	Tobacco	Oil crops	All crops
	A	B	C	D	E	F	G	H	I	J
1910	263	185	357	175	222	172	222	118	323	222
1911	286	192	385	175	192	167	196	118	263	238
1912	244	192	323	169	182	172	204	116	217	208
1913	286	192	333	172	208	169	208	119	270	233
1914	263	192	303	167	167	167	196	116	294	217
1915	238	192	286	169	169	172	213	116	303	200
1916	270	189	357	172	179	172	227	118	323	222
1917	250	192	345	172	192	185	222	118	370	213
1918	263	192	313	172	182	179	222	116	357	217
1919	244	189	333	167	175	192	222	122	345	208
1920	222	192	323	164	159	172	204	123	303	196
1921	244	192	323	161	204	169	244	122	323	204
1922	238	185	303	164	154	179	227	122	294	196
1923	222	185	303	159	152	169	233	119	270	200
1924	250	182	250	159	156	172	208	123	238	204
1925	222	179	286	164	167	159	200	122	250	204
1926	233	179	244	161	139	161	189	123	250	200
1927	222	182	238	156	167	149	204	127	222	192
1928	217	179	222	154	149	147	204	130	256	189
1929	222	175	222	156	152	154	200	125	278	196
1930	244	175	208	159	154	141	204	127	244	200
1931	233	169	192	152	132	156	169	123	278	185
1932	208	172	213	156	149	152	189	127	312	182
1933	250	172	270	149	147	149	196	127	312	200
1934	323	172	256	149	154	167	185	120	312	208
1935	217	169	244	152	132	154	172	122	217	175
1936	294	167	238	147	147	141	167	127	278	200
1937	192	159	208	143	127	141	143	119	256	167
1938	192	161	196	141	130	128	152	122	150	159
1939	185	167	189	139	114	130	149	122	192	159
1940	179	161	169	133	116	119	143	112	185	149
1941	167	154	154	133	112	122	147	116	164	141
1942	147	147	133	127	109	127	128	112	164	128
1943	152	143	143	122	119	137	135	119	159	132
1944	143	137	130	127	106	133	123	108	154	127
1945	132	128	122	119	111	125	132	109	139	118
1946	114	118	111	110	100	114	128	103	132	109
1947	125	110	100	106	101	103	112	105	123	110
1948	92	100	97	96	104	104	103	96	96	96
1949	90	92	103	98	95	92	88	99	82	95
1950	82	84	87	93	93	82	98	95	69	88
1951	81	80	93	89	93	79	87	88	70	89
1952	71	78	76	85	89	74	81	84	63	80
1953	68	74	81	82	84	65	74	79	59	78
1954	65	70	76	79	81	59	69	70	56	72
1955	59	72	70	73	79	56	62	66	52	68
1956	53	71	64	67	79	50	60	63	47	62
1957	46	68	57	65	79	44	56	65	45	56

AL-4. LIVESTOCK AND PRODUCTS: Employment/Output

	Meat animals	Milk cows	Poultry	All livestock & products
	(1947-49 = 100)			
	A	B	C	D
1910	119	161	149	143
1911	122	159	139	141
1912	122	159	141	141
1913	122	152	149	139
1914	122	154	152	139
1915	119	152	147	135
1916	120	156	149	139
1917	122	156	147	137
1918	120	159	147	139
1919	118	154	147	139
1920	118	156	147	141
1921	118	149	141	139
1922	114	149	139	133
1923	112	147	139	132
1924	112	145	145	135
1925	114	143	143	137
1926	112	141	137	132
1927	109	137	139	130
1928	110	137	143	132
1929	110	135	139	132
1930	110	137	139	132
1931	110	139	137	133
1932	110	145	135	133
1933	110	149	141	137
1934	114	154	143	145
1935	115	145	132	143
1936	112	141	133	137
1937	114	141	132	137
1938	111	135	123	132
1939	108	135	125	127
1940	106	133	127	125
1941	105	130	118	122
1942	101	123	114	114
1943	97	125	111	109
1944	101	120	112	111
1945	102	115	108	110
1946	102	109	110	106
1947	101	103	104	103
1948	101	100	102	101
1949	98	97	94	96
1950	97	95	92	93
1951	95	93	83	88
1952	96	91	79	85
1953	95	87	71	83
1954	93	83	65	81
1955	90	81	62	77
1956	91	78	56	74
1957	93	75	53	72

AL-4, SOURCES

COLS. A-D, Agricultural Research Service, *Changes in Farm Production and Efficiency*, September 1959, pp. 22-23, reciprocals of farm production per man-hour times 100.

FORESTRY AND FISH (F)

Forestry: Price (FP)

FP-1. FOREST PRODUCTS: Price

	Lumber (and minor products)	Pulpwood (and fuelwood)	Veneer logs	Naval stores	All forest products ($ bil.)		
					1902 weights	1929 weights	1954 weights (sum of Cols. A-D)
	(bil. dollars, 1954 output weights)						
	A	B	C	D	E	F	G
1870	233				551	898	557
1871	236				559	909	564
1872	243				575	935	581
1873	246				583	949	588
1874	236				559	909	564
1875	216				512	835	516
1876	203				480	784	485
1877	194				459	747	464
1878	177				418	682	423
1879	180				427	696	430
1880	194				459	747	464
1881	207				489	796	495
1882	216				512	835	516
1883	210				497	809	502
1884	210				497	809	502
1885	200				474	770	478
1886	203				480	784	485
1887	207				489	796	495
1888	203				480	784	485
1889	203				480	784	485
1890	203				480	784	485
1891	200				474	770	478
1892	194				459	747	464
1893	197				465	759	471
1894	194				459	747	464
1895	187				442	721	447
1896	187				442	721	447
1897	180				427	696	430
1898	190				450	733	454
1899	210				497	809	502
1900	226	237			536	873	540
1901	216	238		15	522	855	530
1902	233	218		20	532	861	532
1903	249	190		25	536	854	524
1904	256	186		27	543	863	530
1905	269	217		36	596	950	590
1906	302	206		37	634	1000	616
1907	321	221		34	673	1064	651
1908	308	228		25	651	1037	634
1909	321	230		36	681	1078	663
1910	321	215		45	676	1065	657
1911	321	209		45	672	1055	650
1912	335	226		41	701	1106	680
1913	338	241		30	708	1124	688
1914	321	231		30	678	1075	658
1915	312	221		29	654	1038	635
1916	354	391		37	867	1415	884
1917	462	510		37	1120	1834	1140
1918	534	402		65	1154	1832	1131
1919	725	375		112	1442	2233	1370
1920	1059	766		104	2239	3555	2180
1921	571	383		36	1163	1843	1119
1922	633	288		58	1189	1839	1107
1923	718	349		48	1354	2104	1260
1924	636	286		48	1182	1828	1096
1925	646	296		76	1231	1900	1150
1926	643	312		77	1241	1919	1166
1927	597	288		50	1133	1757	1057
1928	581	277		50	1099	1704	1026
1929	604	276		46	1127	1744	1046
1930	551	268		32	1035	1609	962
1931	446	248		27	864	1354	815
1932	374	199		22	718	1121	672
1933	456	204		28	841	1303	777
1934	544	244		32	1003	1554	927
1935	525	225		31	959	1482	883
1936	558	235	108	38	1019	1572	939
1937	640	364	107	40	1248	1943	1151
1938	561	267	105	27	1042	1618	960
1939	600	230	108	30	1067	1640	968
1940	663	350	112	27	1256	1954	1152
1941	787	386	125	41	1475	2279	1339
1942	856	401	124	50	1594	2447	1431
1943	909	402	137	61	1677	2571	1509
1944	984	433	140	80	1828	2793	1637
1945	984	438	140	89	1840	2811	1651
1946	1148	484	173	104	2124	3243	1909
1947	1837	660	286	98	3238	4932	2881
1948	2066	738	363	87	3619	5541	3254
1949	1902	669	311	77	3320	5067	2959
1950	2198	660	358	80	3730	5663	3296
1951	2394	787	375	111	4145	6296	3667
1952	2329	773	343	92	4023	6106	3537
1953	2296	752	343	93	3960	6009	3484
1954	2263	759	330	95	3922	5951	3447
1955	2394	780	340	102	4130	6255	3616
1956	2460	814	312	101	4251	6422	3687
1957	2329	821	284	96	4067	6154	3530

FP-1, SOURCES

Computation of Index in 1954 Outputs:

COL. A, Lumber. Table FP-2, Col. L, times 3.28 (1954: value of output [1] divided by price).

COL. B, Pulpwood. Table FP-8, Col. H, times 6.9 (1954: value of output [2] divided by price).

COL. C, Veneer logs. Table FP-9, Col. C, times 3.2 (1954: value of output divided by price).

COL. D, Naval stores. Table FP-10, Col. C, transcribed.

COLS. E and F, Price index, all forest products. Computed exactly as Col. G, except that 1902 and 1929 outputs were used in weighting the prices of each commodity. (For weights, see notes, below.)

COL. G, Price index, all forest products. Sum of Cols. A-D, adjusted by linking for series missing in earlier years.

FP-1, NOTES

[1] Value of "minor timber products" is added to value of lumber; average unit values of logs for these two classes of products assumed to be equal.

[2] Value of fuelwood added to value of pulpwood; average values assumed equal.

Weighting factors are derived by multiplying the 1954 output by the 1954 average price of logs (as indicated in Table FO-1) and dividing this product by the 1954 index of price for the respective categories as found in Tables FP-2, FP-8, and FP-9. The price series for naval stores (Table FP-10) is weighted with 1954 outputs and requires only to be transcribed. The 1902- and 1929-weighted indexes are obtained by applying a constant multiplier to the naval stores index as a whole, as the relative outputs of turpentine and rosin changed very little between years.

COLS. E and F. The output factors used to weight the commodity prices are as follows:

	Commodity	*1902 weights*	*1929 weights*
A	Lumber (and minor products)	4.62	6.45 [a]
B	Pulpwood (and fuelwood)	5.9	11.0 [a]
C	Veneer logs	—	1.8 [b]
D	Naval stores	.89 (x FP-10, C)	1.10 (x FP-10, C)

[a] There is an apparent anomaly in these weights for lumber plus minor products, since the 1929 "output weights" are 100% higher than those of 1954, even though the 1929 outputs were 10% larger. The reason for the anomaly is that the log prices we chose as the basis for computing value of output moved differently between 1929 and 1954 than did the prices indexes we used in computing the "output weights" (output weight = total value/price index = $p_o q_o / p_o$). "p_o" in the numerator and denominator are from different price series: The numerator, used in computing aggregate value of the commodity in the base year, is log prices; the denominator is the price index, for lumber as it left the mill.

The same anomaly appears in the series on pulpwood (and fuelwood) and affects the 1902 base weights as well as the 1929.

[b] Computed by taking 1939 price index to be equal to 1929 (which is not available); 1939 lumber prices were the same as those for 1929 (cf. Table FP-2).

FP-2. LUMBER: Price

	Historical Statistics and USFS ($ per 1000 bd. ft.)											
	Stumpage price		Sawlog price		Lumber price, all species	Col. B / Col. L	Col. D / Col. L	Col. E / Col. L	Warren & Pearson, wholesale price (1910-14 = 100)	BLS, wholesale price index (1947-49 = 100)	Col. I / Col. J	Pref. series, wholesale price, lumber (1910-14 = 100)
	Douglas fir	All species	Douglas fir	All species								
	A	B	C	D	E	F	G	H	I	J	K	L
1869									75			75
1870									71			71
1871									72			72
1872									74			74
1873									75			75
1874									72			72
1875									66			66
1876									62			62
1877									59			59
1878									54			54
1879									55			55
1880									59			59
1881									63			63
1882									66			66
1883									64			64
1884									64			64
1885									61			61
1886									62			62
1887									63			63
1888									62			62
1889									62			62
1890									62			62
1891									61			61
1892									59			59
1893									60			60
1894									59			59
1895									57			57
1896									57			57
1897									55			55
1898									58			58
1899					11.1			.170	64			64
1900		.79		5.72		.011	.083		69			69
1901		.86		5.59		.013	.085		66			66
1902				6.64			.094		71			71
1903		.93		6.45		.012	.085		76			76
1904		.85		5.77	12.8	.011	.074	.164	78			78
1905		1.88		6.68		.023	.081		82			82
1906		2.43		7.90	16.5	.026	.086	.179	92			92
1907		2.32		8.43	16.6	.024	.086	.169	98			98
1908		2.30		10.4	15.4	.024	.111	.164	94			94
1909		2.11		11.0	15.4	.022	.112	.157	98			98
1910	2.2	3.17	9.0	10.4	15.3	.032	.106	.156	98			98
1911	2.3	3.57	8.0	11.6	15.0	.036	.118	.153	98			98
1912	2.3	2.93	8.0	11.7		.029	.115		102			102
1913	1.7	2.94	8.5	13.1		.029	.127		103			103
1914	1.6	3.91	7.5	12.4		.040	.126		98			98
1915	2.9	2.26	7.0	12.9	14.0	.024	.136	.147	95			95
1916	1.2	2.78	8.5	13.1	15.3	.026	.121	.142	108			108
1917	1.6	2.93	11.0	15.5	20.3	.021	.110	.144	141			141
1918	1.8	3.03	14.5	17.5	24.8	.019	.107	.152	163			163
1919	2.4	3.70	17.0	20.0	30.2	.017	.091	.137	221			221
1920	1.8	3.18	22.0	23.9	38.4	.010	.074	.119	323			323
1921	1.9	3.22	14.5	18.0	23.5	.019	.103	.135	174			174
1922	2.5	3.11	15.0	17.6	26.2	.016	.091	.136	193			193
1923	2.5	4.08	18.5	17.8	31.8	.019	.081	.145	219			219
1924	2.2	3.56	16.0	20.7	28.6	.018	.107	.147	194			194
1925	2.1	3.79	15.0	26.2	28.0	.019	.132	.142	197			197
1926	2.2	4.13	16.0	24.2	27.3	.021	.123	.139	196	33.2	5.90	196
1927	2.5	4.70	15.0	23.2	25.8	.026	.127	.142	183	30.9	5.92	182
1928	2.9	3.69	15.5	20.9	25.6	.021	.118	.145	177	30.1	5.88	177
1929	2.7	3.64	16.0	25.1	26.9	.020	.136	.146	184	31.2	5.90	184
1930	3.3	3.27	15.5	20.8	22.8	.019	.124	.136	167	28.5	5.86	168
1931	2.9	3.13	11.0	17.3	18.6	.023	.127	.137	136	23.1	5.89	136
1932	1.7	2.88	9.5	13.3	15.1	.025	.117	.132	115	19.4	5.93	114
1933	1.2	2.57	9.5	13.3	18.6	.018	.096	.134		23.5		139
1934	1.5	2.87	11.0	15.1	21.5	.017	.091	.130		28.1		166
1935	1.7	2.76	11.5	15.2	20.4	.017	.095	.128		27.2		160
1936	2.1	3.01	14.0	15.9	22.2	.018	.094	.131		28.9		170
1937	1.6	2.84	15.5	17.5	24.2	.015	.090	.124		33.1		195
1938	2.5	2.91	14.5	15.6	21.4	.017	.091	.125		29.0		171
1939		2.68	14.5	16.5	22.0	.015	.090	.120		31.0		183
1940	2.3	2.61	15.5	16.1	23.3	.013	.080	.115		34.2		202
1941	3.6	3.12	17.0	19.4	28.1	.013	.081	.117		40.7		240
1942		3.79		23.9	31.5	.015	.092	.121		44.2		261
1943		4.34		33.1	36.9	.016	.119	.133		47.0		277
1944	5.2									50.9		300
1945	5.0	3.33		32.3		.011	.108			51.5		300
1946	6.6									59.3		350
1947	9.9		33.7	38			.068			94.5		560
1948	19.9		39.3	45			.071			107		630
1949	11.1		39.0	44			.076			98.2		580
1950	16.4		44.7	51			.076			114		670
1951	25.4		47.9	55			.075			124		730
1952	25.8		50.6	58			.082			121		710
1953	20.2		48.0	55			.079			119		700
1954	16.2		48.1	55			.080			117		690
1955	28.9		52.2	60			.082			124		730
1956	37.7		55.0	63			.084			127		750
1957	26.2									120		710

FP-2, SOURCES

COL. A, U. S. Forest Service, *The Demand and Price Situation for Forest Products,* Nov. 1959, p. 23.

COL. B, *Hist. Stat. 1949,* series F-112, all species, stumpage price (source, Forest Service, Technical Bulletin 626).

COL. C, U. S. Forest Service, *Historical Forestry Statistics of the United States,* p. 20 (compiled by Forest Service from Pacific Northwest Loggers Association reports and *The Timberman*).

COL. D

1900-45. *Hist. Stat. 1949,* series F-116, all species, log price.

1947-56. Col. C, linked to Col. D at 1935-41 (average ratio, 1.14).

COL. E, *Hist. Stat. 1949,* series F-120, all species, lumber price.

COL. F, Ratio, Col. B/Col. L.

COL. G, Ratio, Col. D/Col. L.

COL. H, Ratio, Col. E/Col. L.

COL. I, G. F. Warren and F. A. Pearson, *Wholesale Prices in the United States, 1797-1932* (Cornell University Press, 1932), Table 49, index numbers of the wholesale prices of lumber.

COL. J, BLS *Wholesale Prices* Bulls., code 08-1-0, revised wholesale price index, lumber.

COL. K, Ratio, Col. I/Col. J.

COL. L, Preferred series

1870-1926. Col. I, transcribed.

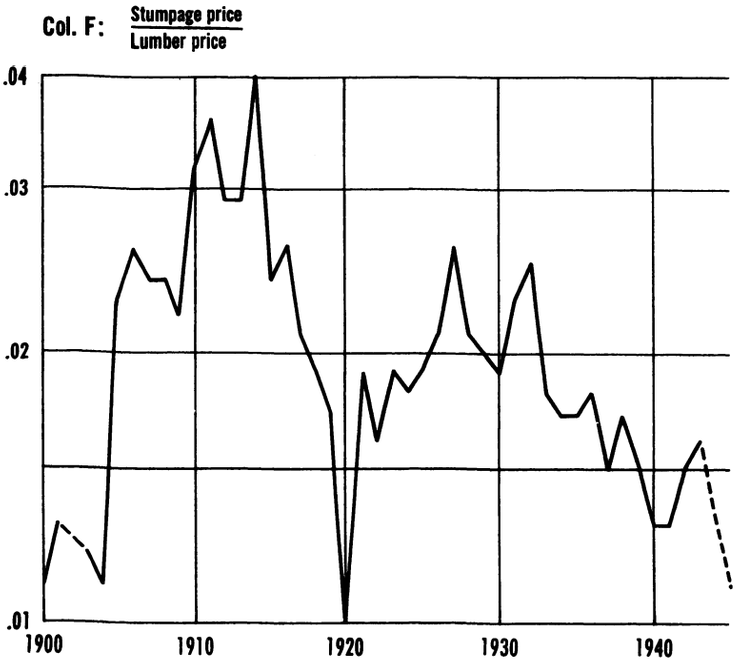
1927-57. Col. J times the average of the ratios in Col. K (ratio, 5.9).

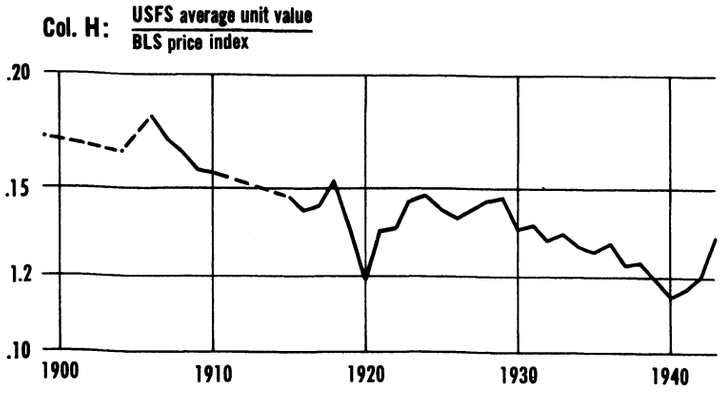
FP-2, NOTES

COLS. A and C. For 1910-31 these represent National Forest timber sales, all species, Washington and Oregon; 1932-41, all species, western Washington and western Oregon; 1944-57, National Forest and Bureau of Land Management sales of Douglas fir only in western Washington and western Oregon. Prices in dollars per 1,000 board feet, Scribner C log scale.

COLS. B and D. These log prices represent an average of species east of the Great Plains only. The log scales (Doyle, Scribner, etc.) used as bases are not indicated. Data from mail questionnaires to loggers, sawmills, etc., published for 1900-34 by the U.S. Department of Agriculture in Technical Bulletin 626, *Stumpage Prices of Privately Owned Timber in the United States,* and for 1935-45 in annual bulletins, *Stumpage and Log Prices.*

COLS. F and G. These declining ratios of stumpage and log prices relative to lumber price are contrary to the indications shown for Douglas fir, the principal consistent series available (see below, Table FP-4, Col. D).

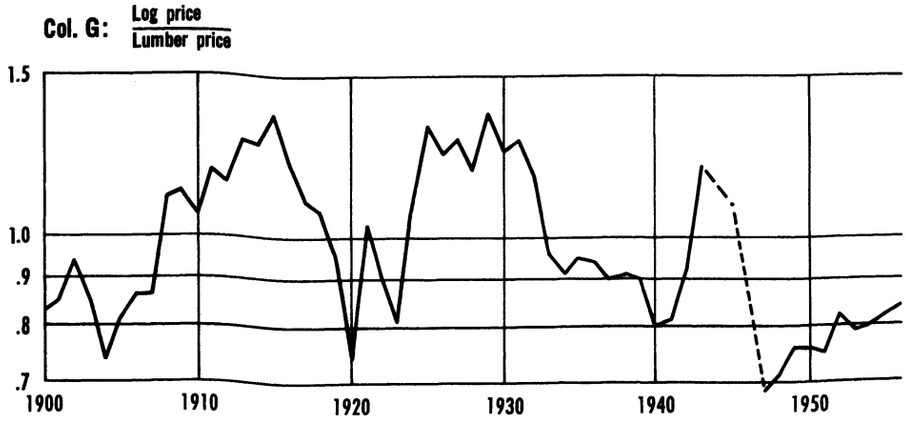




COL. H. The Forest Service average unit value series falls relative to the Bureau of Labor Statistics index presumably because of increasing distances between sources and markets and because of relatively larger quantities of poorer quality lumber.

COL. I. "From 1860 to 1891 the following commodities and weights were used: white pine 31.6; yellow pine 10.5; oak timber 13.2; spruce boards 6.6; pine shingles 15.8; white oak hogshead staves 4.6; red oak hogshead staves 4.6; white oak barrel staves 4.6; white oak pipe staves 4.5; white oak headings 3.9.

"From 1890 to 1915 an index number of wholesale prices of lumber, with 1910-14 taken as 100, was calculated from



(continued on page 247)

FP-3. YELLOW PINE: Price

FP-3, SOURCES

COL. A, Henry B. Steer, *Lumber Production in the United States, 1799-1946* (U.S. Forest Service, 1948), Table 83, yellow pine, average price, Mississippi.

COL. B, *Ibid.*, yellow pine, average price, Louisiana.

COL. C, Ratio, Col. A/Col. I.

COL. D, Ratio, Col. B/Col. I.

COL. E

1910-55. U.S. Forest Service, *Price Trends and Relationships for Forest Products* (House Doc. 195, 85th Congress, 1st Sess., June 1957), p. 51, stumpage price for southern pine, current dollars.

1956-57. *Demand and Price Situation for Forest Products*, Nov. 1959, p. 23, stumpage price for southern pine.

COL. F, Ratio, Col. E/Col. I.

COL. G, *Price Trends and Relationships*, p. 58, southern pine flooring, price paid by farmers (source, Agricultural Marketing Service).

COL. H

1940-55. *Ibid.*, p. 58, southern pine flooring, f.o.b. mill (source, Bureau of Labor Statistics).

1956. BLS *Wholesale Prices* Bulls., series 08-12-01, flooring, southern pine.

1957. *Ibid.*, specification "B and better."

COL. I, Steer, Table 83, yellow pine, average price, U.S.

	Steer ($ per 1000 bd. ft.)		Col. A / Col. I	Col. B / Col. I	USFS, stumpage ($ per 1000 bd. ft.)	Col. E / Col. I	AMS, pine flooring, price paid by farmers	USFS-BLS, south. pine flooring, f.o.b. mill	Steer, U.S. average price	Col. I / Col. K	Preferred series, BLS, yellow pine flooring (1926 = 100)
	Miss. price	La. price					($ per 1000 bd. ft.)				
	A	B	C	D	E	F	G	H	I	J	K
1890											32.2
1891											31.1
1892											28.7
1893											28.7
1894											28.7
1895											26.3
1896											25.5
1897											25.5
1898											29.0
1899	8.88	8.06							8.46	.272	31.1
1900											32.1
1901											30.6
1902											32.6
1903											32.6
1904	10.7	10.0	1.07	1.00					9.96	.299	33.3
1905	n.a.	n.a.							n.a.		38.7
1906	16.2	15.0	1.08	1.00					15.0	.329	45.6
1907	14.9	14.7	1.06	1.05					14.0	.295	47.4
1908	13.5	12.0	1.06	.945					12.7	.268	47.4
1909	13.4	12.5	1.06	.984					12.7	.247	51.4
1910	13.7	13.2	1.03	.992	1.50	.113			13.3	.278	47.9
1911	14.2	14.1	1.02	1.01	2.80	.201			13.9	.292	47.6
1912	14.8	14.6	1.03	1.01	1.50	.104			14.4	.280	51.5
1913	n.a.	n.a.			1.70				n.a.		51.1
1914	n.a.	n.a.			2.90				n.a.		47.4
1915	12.3	12.4	.992	1.00	2.10	.169			12.4	.276	45.0
1916	14.8	14.9	1.03	1.04	3.20	.224			14.3	.285	50.2
1917	18.8	20.4	.989	1.07	3.40	.179			19.0	.277	68.6
1918	24.5	25.1	1.00	1.03	3.00	.123			24.4	.326	74.8
1919	29.4	31.5	1.02	1.10	3.70	.129			28.7	.235	122
1920	36.7	42.5	1.02	1.18	4.40	.123			35.9	.218	165
1921	18.8	21.1	.969	1.09	3.70	.191			19.4	.244	79.6
1922	24.5	26.0	1.03	1.10	2.80	.118			23.7	.235	101
1923	31.6	32.5	1.06	1.09	3.00	.101			29.8	.281	106
1924	27.8	30.0	1.04	1.13	3.50	.132			26.6	.287	92.8
1925	25.7	30.4	.970	1.15	3.20	.121			26.5	.257	103
1926	28.4	31.0	1.07	1.17	3.60	.136			26.5	.265	100
1927	26.2	28.2	1.10	1.18	3.50	.147			23.8	.279	85.3
1928	26.9	28.6	1.09	1.16	3.60	.146			24.6	.304	80.9
1929	28.2	30.2	1.10	1.18	3.50	.136			25.7	.309	83.1
1930	23.1	26.8	1.09	1.27	3.20	.152			21.1	.274	77.0
1931	20.0	19.7	1.18	1.16	3.40	.200			17.0	.274	62.1
1932	14.4	15.6	1.08	1.17	2.80	.211			13.3		
1933	20.4	20.5	1.14	1.15	2.70	.151			17.9	.310	57.8
1934	23.7	27.1	1.10	1.25	2.90	.134			21.6	.273	79.2
1935	19.6	21.6	1.08	1.19	4.50	.247			18.2	.234	77.8
1936	22.2	24.8	1.07	1.19	n.a.	n.a.			20.8	.257	80.9
1937	23.8	33.1	1.07	1.49	5.30	.239			22.2	.229	96.8
1938	18.3	22.6	.963	1.19	7.30	.384			19.0	.213	89.2
1939	20.2	23.4	1.03	1.19	5.80	.294			19.7	.224	87.9
1940	20.7	25.1	.967	1.17	4.50	.210	65.3	44.4	21.4	.226	94.8
1941	23.7	32.0	.929	1.25	10.8	.424	70.9	51.1	25.5	.234	109
1942	26.2	33.5	.942	1.20	8.90	.320	79.5	54.8	27.8	.238	117
1943	34.7	40.8	.997	1.17	8.70	.250	85.5	55.0	34.8	.295	118
1944					10.9		96.2	a			125
1945					9.30		98.9	56.7			128
1946					8.90		105	68.0			154
1947					10.9		186	137			301
1948					16.4		220	156			343
1949					19.7		207	144			317
1950					26.7		204	150			330
1951					34.6		225	155			343
1952					38.5		222	157			346
1953					34.2		222	158			346
1954					29.7		219	153			337
1955					32.0		223	150			330
1956					37.4			154			340
1957					31.5			147			324

FP-3 (Yellow Pine) SOURCES (continued)

COL. J, Ratio, Col. I/Col. K.

COL. K, Preferred series. BLS *Wholesale Prices* Bulls.: yellow pine, flooring, B and better (etc.), Worksheet 1 of this table, Col. H.

FP-3, NOTES

[a] Change in specification.

The price series from Steer are average unit values for rough lumber at the mill. They have been taken from mail questionnaires. The use of average unit values for the nation is questionable as a representation of trend, because of (a) shifts in the geographic pattern of production, with perhaps a shift toward more remote (lower price) areas; and (b) a shift toward lower quality lumbers. The charts may reflect these forces pushing average value down relative to the price of a single quality at a fixed location.

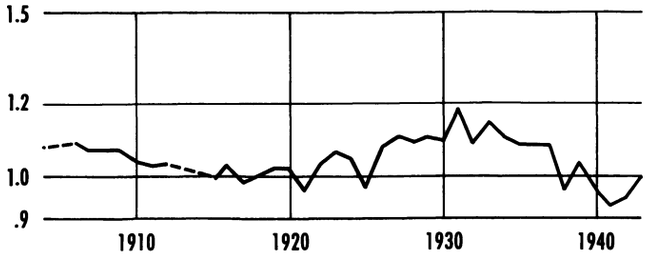
The stumpage price series (Col. E) probably provides a still less accurate reflection of resource scarcity than the average unit value of lumber, because it has no adequate standards of quality, location, and accessibility.

The BLS series is beset with numerous changes in specifications, and BLS itself links across only a few of these gaps; no continuous series exists (cf. Worksheet 1 of this table). In Col. K an attempt is made to derive a long-term consistent series from BLS, despite the changes.

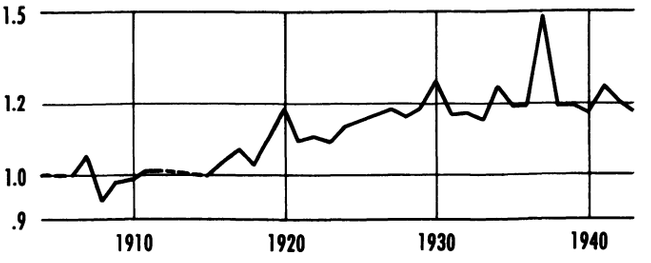
The series presented in Col. H is "Data from BLS; for 1940-46 as quoted by Dickenson (*The Influence of Transportation Methods on the Distribution of Southern and Western Softwood Lumber*, Ph.D. thesis, Yale University, 1951)." For most years, the data are identical to ours as given in Cols. D and F in the worksheet on the next page. The slight difference in trend is due to the fact that we have linked the series in Cols. D and F, while the Forest Service moved from one BLS series to the other without adjustment.

The AMS series in Col. G was taken from *Crops and Markets*, 1956 edition, and refers to prices paid by farmers, June 15 of each year, for "Yellow pine, flooring, 25/32" x 2⅜" (1" x 4" for June 1954 and following) B and better." These prices are also derived from mail questionnaires.

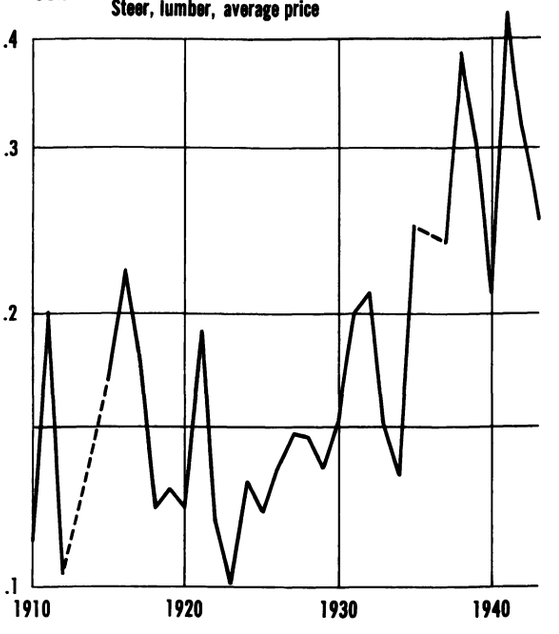
Col. C: Yellow pine, Miss. / Yellow pine, U.S.



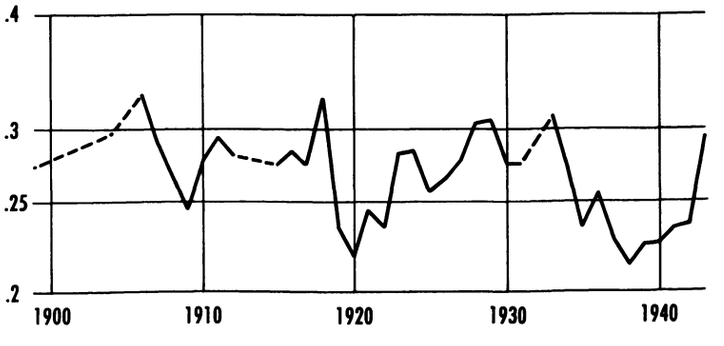
Col. D: Yellow pine, La. / Yellow pine, U.S.



Col. F: USFS stumpage price / Steer, lumber, average price



Col. J: Steer / BLS



FP-2 (Lumber) NOTES (continued)

the following products reported by the Bureau of Labor Statistics: white pine boards, no. 2 barn, 10; white pine boards, uppers, 5; yellow pine sidings, 33; hemlock, 7; maple, 5; white oak plain, 5; white oak, quartered, 20; poplar, 5; spruce, 5; cypress shingles, 2; cedar shingles, 3.

"After 1914, the index numbers are based on the lumber index of the Bureau of Labor Statistics." (Warren and Pearson, *op. cit.*)

COL. J. The Bureau of Labor Statistics series currently contains four classes: Douglas fir (24%), southern pine (27%), other softwoods (21%), and hardwoods (28%). (Figures in parentheses represent base value weights relative to the total for the subgroup, 1947-49).

COL. L. The Bureau of Labor Statistics series has been spliced to the Warren and Pearson series on the basis of the average of the ratios for the years of overlap 1926-32 (Col. K). The slight differences are due to revision of the series in recent years.

FP-3. WORKSHEET 1. YELLOW PINE: Price

	Siding, No. 2, 4/4 edge		Col. E / Col. B	Flooring, 1 × 4, B & better, F.G., sap, mills		Flooring, B & better		Linked BLS series (1926 = 100)
	($ per 1000 bd. ft.)	(1926 = 100)		($ per 1000 bd. ft.)	(1926 = 100)	($ per 1000 bd. ft.)	(1947-49 = 100)	
	A	B	C	D	E	F	G	H
1890	20.75	33.1						32.2
1891	19.96	31.9						31.1
1892	18.50	29.5						28.7
1893	18.50	29.5						28.7
1894	18.50	29.5						28.7
1895	16.92	27.0						26.3
1896	16.42	26.2						25.5
1897	16.44	26.2						25.5
1898	18.62	29.8						29.0
1899	20.09	32.0						31.1
1900	20.71	33.0						32.1
1901	19.67	31.4						30.6
1902	21.00	33.5						32.6
1903	21.00	33.5						32.6
1904	21.42	34.2						33.3
1905	24.92	39.8						38.7
1906	29.33	46.9						45.6
1907	30.50	48.7						47.4
1908	30.50	48.7						47.4
1909	33.04	52.8						51.4
1910	30.80	49.2						47.9
1911	30.59	48.9						47.6
1912	33.14	52.9						51.5
1913	32.14	51.3	.996	23.04	51.1			51.1
1914	29.62	47.3	1.00	21.37	47.4			47.4
1915	28.18	[a]45.0	1.00	20.29	45.0			45.0
1916	31.82/26.92	50.8	.988	22.64	50.2			50.2
1917	36.21	68.4	1.00	30.93	68.6			68.6
1918	42.62	80.5	.929	33.76	74.8			74.8
1919	54.33	103	1.18	55.01	122			122
1920	96.25	182	.906	74.53	165			165
1921	49.58	93.6	.850	35.90	79.6			79.6
1922	55.46	105	.962	45.46	101			101
1923	61.42	116	.914	47.70	106			106
1924	53.58	101	.919	41.87	92.8			92.8
1925	54.04	102	1.01	46.49	103			103
1926	52.96	100	1.00	45.11	100			100
1927	48.46	91.5	.932	38.48	85.3			85.3
1928	44.75	84.5	.957	36.48	80.9			80.9
1929	43.67	82.5	1.01	37.50	83.1			83.1
1930	42.12	79.5	.968	34.74	77.0			77.0
1931				27.99	62.1			62.1
1932				19.08	[b]			[b]
1933				26.76	57.8			57.8
1934				36.65	79.2			79.2
1935				36.02	77.8			77.8
1936				37.47	80.9			80.9
1937				44.83	96.8			96.8
1938				41.33	89.2			89.2
1939				40.70	87.9			87.9
1940				[c]44.35	[c]94.8			[c]94.8
1941				51.15	109			109
1942				54.83	117			117
1943				n.a.	118			118
1944				[d]54.84	[d]125			[d]125
1945				56.69	128			128
1946				68.01	154			154
1947				133.10	301	[e]137	93.8	301
1948				151.90	343	[e]156	107	343
1949						[e]144	98.9	317
1950						[e]149	103	330
1951						[e]155	107	343
1952						[e]157	108	346
1953						[e]158	108	346
1954						[e]153	105	337
1955						150	103	330
1956						154	106	340
1957						147	101	324

FP-3, Worksheet, SOURCES

COL. A, BLS *Wholesale Prices* Bulls. No. 320, 493, and subsequent years, pine, yellow, 1,000 ft., siding, No. 2 and better, 4/4 edge, under 12 inches.

COL. B, Index for Col. A (1926 = 100); 1926-based and 1913-based indexes were linked at 1916 (link factor, 50.8/99.0 = .51313).

COL. C, Ratio, Col. E/Col. B.

COL. D, BLS *Wholesale Prices* Bulls. No. 493 and subsequent years, pine, yellow, 1,000 ft., flooring, 1 by 4, B and better, F.G. sap, mills.

COL. E, Index for Col. D (1926 = 100).

COL. F, BLS, *Prices and Price Relatives for Individual Commodities in the Revised Index,* series 08-12-01, southern pine, flooring, B and better, dried.

COL. G, Index for Col. F (1947-49 = 100).

COL. H, The complete BLS series

1890-1912. Col. B linked to Col. E by average of Col. C ratios (0.9734).

1913-48. Col. E, transcribed.

1949-57. Col. G linked to Col. E by average of 1947-48 ratios (3.2075).

FP-3, Worksheet, NOTES

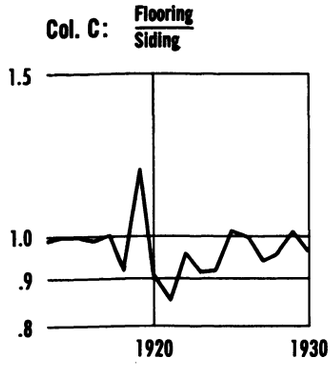
[a] BLS *Wholesale Prices* Bull. No. 493 (1913-28) shows a rise of 50.8/38.9 (about 30%) in the index for 1916/1915, while Bull. No. 320 (1890-1921) shows a rise of 99.0/87.7 (about 12%). (There is a change in specification at this point, but dollar prices for each grade are identical in Bull. No. 320 and in Bull. No. 493. This change in specifications is represented by the two figures given in Col. A. The left-hand figure refers to the earlier series and the right-hand figure to the series for the later years.) A check of the other yellow pine lumber series in Bull. 493 shows the siding index series to give an unrepresentative (too great) change for 1915-16 (and for 1913-26), so we have used the index from Bull. No. 320 rather than Bull. No. 493 for the 1915-16 change.

[b] No 1926 base price; change in specifications.

[c] Revised.

[d] BLS started a new series in 1944 entitled "Flooring, B and better, 1" x 4", S/L, F.G., P.E., KD, bundled, S.L., carlot or mixed car, f.o.b. mill, per M bd. ft." Figures are given for only 9 months. We computed a yearly average, assuming that during the last 3 months the price remained at the September level.

[e] Average of monthly wholesale prices.



FP-4. DOUGLAS FIR: Price

FP-4, SOURCES

COL. A

1910-55. U.S. Forest Service, *Price Trends and Relationships for Forest Products* (House Doc. 195, 85th Cong., 1st Sess., June 1957), p. 55, Douglas fir, lumber price.

1956-57. *Stat. Abstract 1960*, p. 700.

COL. B

1910-55. USFS, *op. cit.*, p. 51, Douglas fir, stumpage price.

1956-57. *Stat. Abstract 1960*, p. 700.

COL. C, USFS, *op. cit.*, p. 58, Douglas fir, dimension, price f.o.b. mill.

COL. D, Ratio, Col. B/Col. A.

COL. E, Ratio, Col. I/Col. A.

COL. F, Ratio, Col. B/Col. I.

COL. G, BLS *Wholesale Prices* Bulls.

1913-48. "No. 1, sheathing."

1949-57. "Boards, No. 1, dried" (series 08-11-31), linked to earlier series at 1947-48 (ratio 3.932).

COL. H, Ratio, Col. G/Col. I.

COL. I, Steer, Table 72, Douglas fir, average price (of lumber).

COL. J, Preferred series

1899, 1904-12. Col. I, linked to Col. G by 10-year average (1915-24) of Col. H (average, 5.117).

1913-57. Col. G, transcribed.

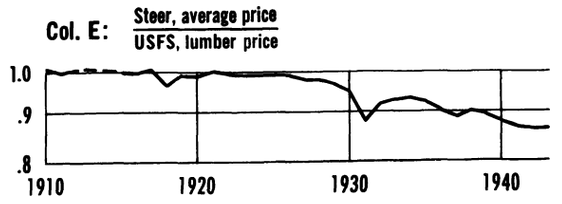
FP-4, NOTES

COL. A. The series gives as its source "1910-29, U.S. Dept. of Commerce, Bureau of the Census, and U.S. Dept. of Agriculture, Forest Service; 1930-55, West Coast Lumbermen's Association, average realization per thousand board feet on lumber shipments, f.o.b. mill." No reason is given for differences between this series and Col. I, from the same source 1910-29. (See Col. E chart.)

COL. B. The stumpage price, for several reasons, is not a good measure of wood scarcity. See notes to Table FP-3.

COL. C. The series is described as referring to "Douglas fir dimension, 2 by 4 inches random length standard and better

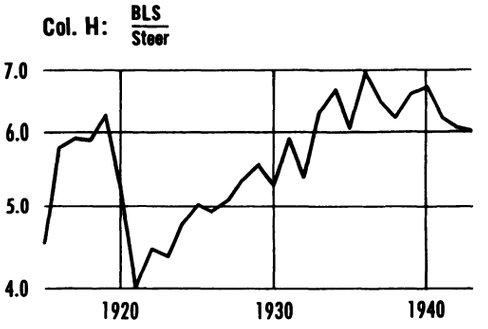
	U.S. Forest Service and Stat. Ab. ($ per 1000 bd. ft.)			Col. B / Col. A	Col. I / Col. A	Col. B / Col. I	BLS, No. 1 sheathing (1926 = 100)	Col. G / Col. I	Steer, average price ($ per 1000 bd. ft.)	Preferred series, lumber price (1926 = 100)
	Lumber	Stumpage	Dimension, f.o.b. mill							
	A	B	C	D	E	F	G	H	I	J
1899									8.67	44.4
1904									9.51	48.7
1905									n.a.	
1906									14.2	72.7
1907									14.1	72.1
1908									12.0	61.4
1909									12.4	63.5
1910	13.0	2.20		.169	1.01	.168			13.1	67.0
1911	11.0	2.30		.209	1.00	.209			11.0	56.3
1912	11.5	2.30		.200	1.01	.198			11.6	59.4
1913	n.a.	1.70		n.a.	n.a.	n.a.	55.9		n.a.	55.9
1914	n.a.	1.60		n.a.	n.a.	n.a.	48.0		n.a.	48.0
1915	10.6	2.90		.274	1.00	.274	47.8	4.51	10.6	47.8
1916	10.8	1.20		.111	1.00	.111	62.9	5.82	10.8	62.9
1917	16.2	1.60		.099	1.01	.098	96.3	5.91	16.3	96.3
1918	19.5	1.80		.092	.964	.096	110.7	5.89	18.8	111
1919	24.9	2.40		.096	.988	.098	154.2	6.27	24.6	154
1920	34.9	1.80		.052	.991	.052	181.5	5.25	34.6	182
1921	18.0	1.90		.106	1.00	.106	71.8	3.99	18.0	71.8
1922	21.0	2.50		.119	.995	.120	92.5	4.43	20.9	92.5
1923	27.3	2.50		.092	.989	.093	117.8	4.36	27.0	118
1924	22.4	2.20		.098	.987	.100	104.7	4.74	22.1	105
1925	21.1	2.10		.100	.990	.100	104.7	5.01	20.9	105
1926	20.4	2.20		.108	.990	.109	100.0	4.95	20.2	100
1927	19.8	2.50		.126	.980	.129	98.8	5.09	19.4	98.8
1928	19.4	2.90		.149	.979	.153	101.7	5.35	19.0	102
1929	20.6	2.70		.131	.971	.135	111.0	5.55	20.0	111
1930	17.8	3.30		.185	.949	.195	89.2	5.28	16.9	89.2
1931	13.6	2.90		.213	.882	.242	70.7	5.89	12.0	70.7
1932	11.5	1.70		.148	.922	.160	57.1	5.39	10.6	57.1
1933	14.6	1.20		.082	.932	.088	85.7	6.30	13.6	85.7
1934	17.2	1.50		.087	.936	.093	107.0	6.65	16.1	107
1935	17.3	1.70		.098	.925	.106	97.1	6.07	16.0	97.1
1936	19.5	2.10		.108	.908	.119	123.5	6.98	17.7	123
1937	22.2	1.60		.072	.887	.081	127.1	6.45	19.7	127
1938	19.1	2.50		.131	.906	.144	107.6	6.22	17.3	108
1939	20.0	n.a.		n.a.	.895	n.a.	117.7	6.58	17.9	118
1940	22.2	2.30	23.1	.104	.878	.118	129.5	6.64	19.5	129
1941	29.4	3.60	26.5	.122	.867	.141	158.4	6.21	25.5	158
1942	35.3	n.a.	32.3	n.a.	.864	n.a.	185.0	6.07	30.5	185
1943	38.1	n.a.	32.4	n.a.	.866	n.a.	199.1	6.03	33.0	199
1944	38.3	5.20	34.2	.136			218.5		n.a.	218
1945	39.0	5.00	34.4	.128			214.3		n.a.	214
1946	45.5	6.60	40.7	.145			244.2		n.a.	244
1947	70.6	9.90	66.4	.140			389.9			390
1948	77.2	19.9	72.4	.257			423.3			423
1949	61.2	11.1	63.4	.181			366.9			367
1950	73.3	16.4	77.0	.223			454.1			454
1951	80.5	25.4	82.6	.315			489.9			490
1952	78.8	25.8	84.9	.327			491.5			491
1953	73.1	20.2	78.5	.276			467.5			467
1954	72.2	16.2	79.2	.224			453.4			453
1955	80.9	28.9	87.2	.357			475.0			475
1956	81.2	37.7		.464			464.4			464
1957	71.8	26.2		.364			416.8			417

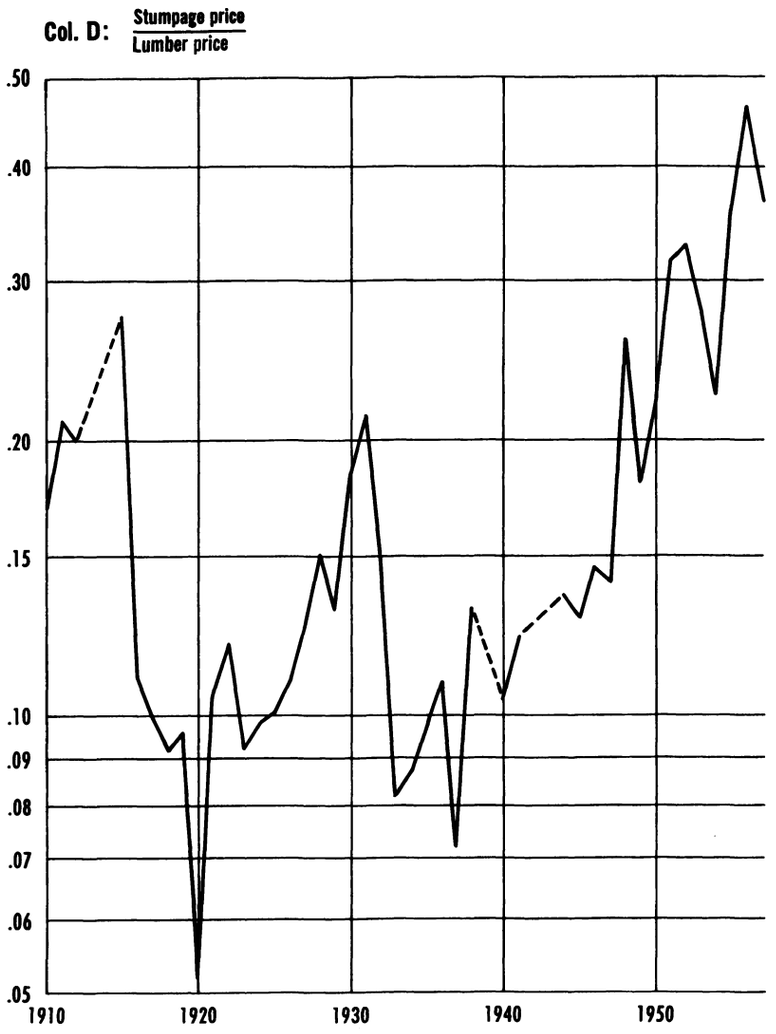


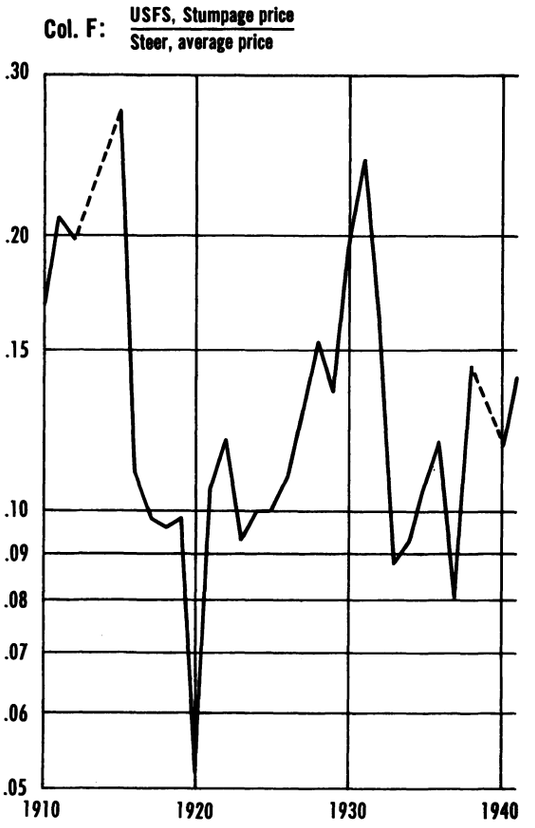
grade." Data from BLS; for 1940-46 as quoted by Dickenson (*The Influence of Transportation Methods on the Distribution of Southern and Western Softwood Lumber,* Ph.D. thesis, Yale University, 1951). The same series is given in *Bus. Stat. 1957* for 1929-56 (p. 151), with a note that the specification changes between 1946 and 1947. The BLS describes the series quoted by Dickenson as "Dimension, no. 1, common, 2" x 4" x 16', dried, S4S, SIE or rough, mixed carlot, f.o.b. mill," code no. 515-2, and carries it forward to 1948. This series, however, is not consistent with the series reported in *Price Trends* for 1947-55, although the differences are small (1947 price for the former series is $63.779 and for the latter, $66.454). The latter series, however, is not given by BLS as annual averages in absolute terms because of changes in specification. The price relatives, which have been adjusted for these changes, show a 22.4% increase, 1950 over 1947, while the absolutes reported by *Price Trends* and *Business Statistics* show an increase of only 15.9%.

Col. I. The series represents average unit value for rough lumber at the mill. The data have been derived from mail questionnaires with follow-up interviews. Only two states are involved to any extent. A shift in production from Washington to Oregon has taken place, and since average unit values are lower in the latter state, the trend has been depressed slightly by this shift.

Col. J. As the Col. H chart shows, the two series are not closely parallel and the linking is therefore dubious. We have used the nearly continuous BLS series as far back as possible. Steer, while perhaps a poor source, offers the only readily available data prior to 1910.







FP-5. WHITE PINE: Price

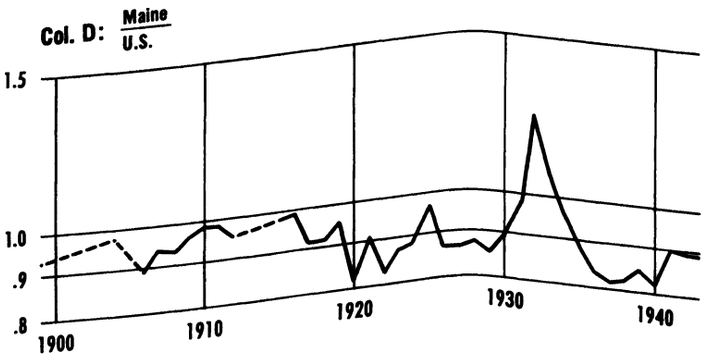
	Steer ($ per 1000 bd. ft.)			Col. A / Col. G	Col. B / Col. G	Col. C / Col. G	Preferred series, U.S. average ($ per 1000 bd. ft.)
	Maine	Minnesota	Idaho				
	A	B	C	D	E	F	G
1899	11.72	12.23	9.15	.926	.966	.723	12.66
1904	14.62	14.64	9.10	.979	.980	.610	14.93
1906	16.45	17.46	15.73	.898	.953	.859	18.32
1907	18.27	19.13	17.43	.941	.986	.898	19.41
1908	16.98	18.19	18.31	.934	1.00	1.01	18.17
1909	17.53	17.23	17.35	.965	.949	.955	18.16
1910	18.73	18.40	18.37	.989	.972	.970	18.93
1911	18.30	18.67	17.57	.987	1.01	.948	18.54
1912	18.19	18.91	17.93	.951	.988	.937	19.13
1915	17.10	18.41	17.34	.980	1.06	.994	17.44
1916	19.00	18.61	19.34	.992	.971	1.01	19.16
1917	22.68	25.86	25.56	.914	1.04	1.03	24.81
1918	28.21	30.77	32.84	.915	.998	1.06	30.84
1919	31.50	31.23	35.99	.959	.951	1.10	32.83
1920	33.94	37.45	53.92	.818	.903	1.30	41.49
1921	27.40	26.32	38.60	.912	.876	1.29	30.03
1922	29.91	39.43	42.35	.822	1.08	1.16	36.37
1923	30.36	30.42	45.17	.871	.873	1.30	34.85
1924	28.83	31.06	36.71	.883	.951	1.12	32.66
1925	31.82	30.19	37.04	.977	.927	1.14	32.58
1926	27.18	28.92	36.49	.867	.922	1.16	31.36
1927	25.93	29.94	33.15	.867	1.00	1.11	29.90
1928	25.16	28.78	30.28	.876	1.00	1.05	28.71
1929	25.50	30.60	31.53	.854	1.02	1.06	29.87
1930	24.92	22.66	31.13	.896	.815	1.12	27.81
1931	24.42	22.25	26.63	.988	.900	1.08	24.71
1932	26.61	18.80	23.84	1.23	.871	1.10	21.58
1933	23.03	20.85	22.22	1.07	.972	1.04	21.45
1934	22.82	25.53	25.70	.961	1.08	1.08	23.75
1935	22.75	24.67	27.46	.886	.961	1.07	25.66
1936	21.98	28.36	28.95	.836	1.08	1.10	26.28
1937	23.85	29.20	32.84	.817	1.00	1.12	29.20
1938	21.99	23.62	31.11	.821	.882	1.16	26.77
1939	21.81	20.65	29.18	.842	.797	1.13	25.90
1940	22.82	22.04	32.81	.819	.791	1.18	27.87
1941	27.33	24.89	37.46	.901	.821	1.24	30.32
1942	29.80	31.12	39.59	.898	.938	1.19	33.17
1943	34.91	43.03	42.16	.894	1.10	1.08	39.03

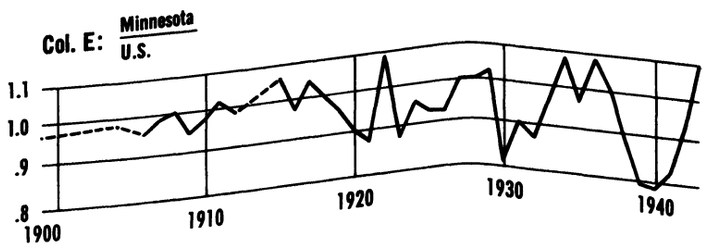
FP-5, SOURCES

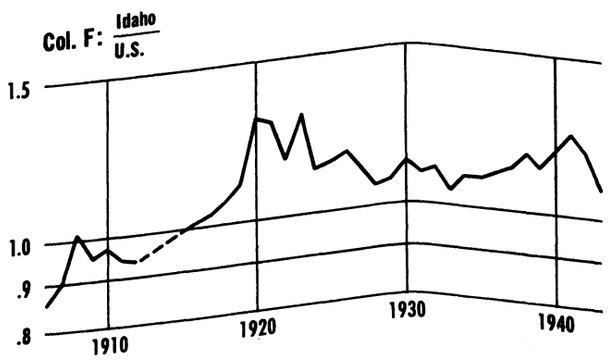
COL. A, Steer, Table 82, white pine, average price, Maine.
COL. B, *Ibid.*, white pine, average price, Minnesota.
COL. C, *Ibid.*, white pine, average price, Idaho.
COL. D, Ratio, Col. A/Col. G.
COL. E, Ratio, Col. B/Col. G.
COL. F, Ratio, Col. C/Col. G.
COL. G, Preferred series. Steer, Table 82, white pine, average price, U.S.

FP-5, NOTES

The Steer series are average unit values, f.o.b. mills, and were derived from mail questionnaires without follow-up canvas until 1942. No other consistent long-term series are readily available. White pine was formerly a leading wood but is no longer available in large quantities.







FP-6. PONDEROSA PINE: Price

FP-6, SOURCES

COL. A, Steer, Table 76, ponderosa pine, average price f.o.b. mill, Oregon.

COL. B, Steer, Table 76, ponderosa pine, average price f.o.b. mill, California.

COL. C

1929-56. *Bus. Stat. 1957,* p. 152, price, wholesale, ponderosa, boards, No. 3 common, 1" x 8" (source, BLS).

1957. BLS, *Wholesale Prices* Bull., series 08-13-01.

COL. D

1910-55. U.S. Forest Service, *Price Trends and Relationships for Forest Products* (House Doc. 195, 85th Cong., 1st Sess., June 1957), stumpage price, ponderosa pine, current dollars.

1956-57. *Demand and Price Situation,* Nov. 1959, p. 23.

COL. E, Ratio, Col. A/Col. I.

COL. F, Ratio, Col. B/Col. I.

COL. G, Ratio, Col. C/Col. I.

COL. H, Ratio, Col. D/Col. I.

COL. I, Preferred series

1899-1943. Steer, Table 76, ponderosa pine, average price, f.o.b. mill, United States.

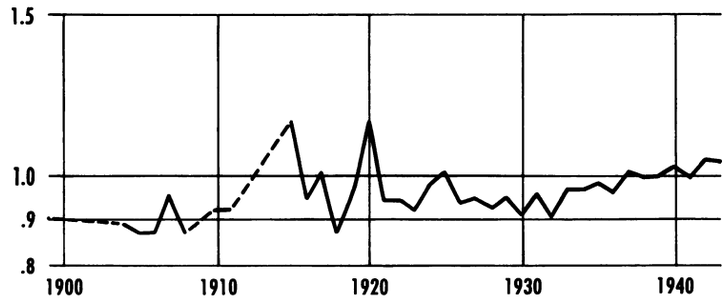
1944-57. Col. C, linked to Col. I at 1942-43.

FP-6, NOTES

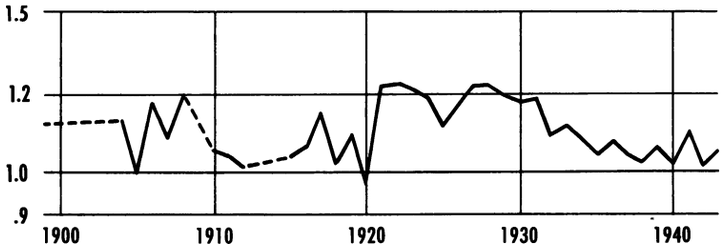
The Steer series are average unit values f.o.b. mills and have been derived from mail questionnaires with follow-up field canvass for 1912 and years following. The two major producing states are Oregon and California, which in 1940-43 produced respectively 43% and 28% of the total.

	Steer, average price f.o.b. mill, Oregon	Steer, average price f.o.b. mill, California	Bus. Stat. & BLS, wholesale price, no. 3 common	USFS, stumpage price, current dollars	Col. A / Col. I	Col. B / Col. I	Col. C / Col. I	Col. D / Col. I	Preferred series, Steer, average price f.o.b. mill, U.S.
	($ per 1000 bd. ft.)								($ per 1000 bd. ft.)
	A	B	C	D	E	F	G	H	I
1899	8.82	10.9			.909	1.12			9.70
1904	10.1	12.8			.894	1.13			11.3
1905	n.a.	n.a.			.871	.993			n.a.
1906	12.2	13.9			.873	1.17			14.0
1907	13.7	18.3			.960	1.08			15.7
1908	14.4	16.2			.870	1.20			15.0
1909	13.4	18.5							15.4
1910	13.2	15.0		3.60	.923	1.05		.252	14.3
1911	12.9	14.4		2.50	.928	1.04		.180	13.9
1912	n.a.	13.8		2.70		1.01		.199	13.6
1913	n.a.	n.a.		2.20					n.a.
1914	n.a.	n.a.		2.00					n.a.
1915	16.3	14.9		2.50	1.14	1.04		.175	14.3
1916	13.8	15.4		2.90	.952	1.06		.200	14.5
1917	19.7	22.5		2.20	1.01	1.15		.112	19.6
1918	18.2	21.3		2.70	.871	1.02		.129	20.9
1919	27.1	30.4		3.00	.975	1.09		.108	27.8
1920	44.0	37.5		3.70	1.14	.969		.096	38.7
1921	25.5	33.2		3.20	.945	1.23		.119	27.0
1922	26.3	34.4		4.00	.946	1.24		.144	27.8
1923	30.6	40.0		3.90	.924	1.21		.118	33.1
1924	27.3	33.1		3.50	.986	1.19		.126	27.7
1925	28.0	30.9		3.60	1.01	1.12		.130	27.7
1926	25.0	31.5		3.70	.940	1.18		.139	26.6
1927	24.7	31.9		3.40	.950	1.23		.131	26.0
1928	24.6	32.4		2.50	.932	1.23		.095	26.4
1929	25.2	31.7	21.1	3.60	.951	1.20	.796	.136	26.5
1930	21.6	27.8	17.5	3.60	.919	1.18	.745	.153	23.5
1931	19.7	24.4	14.8	4.20	.961	1.19	.722	.205	20.5
1932	15.4	18.5	11.3	2.60	.911	1.09	.669	.154	16.9
1933	18.1	20.7	14.5	n.a.	.973	1.11	.780	n.a.	18.6
1934	19.9	22.1	18.8	2.50	.971	1.08	.917	.122	20.5
1935	20.1	21.2	19.4	2.40	.985	1.04	.951	.118	20.4
1936	21.1	23.4	18.5	2.20	.968	1.07	.849	.101	21.8
1937	24.8	25.4	21.5	2.20	1.01	1.04	.878	.090	24.5
1938	22.2	22.7	17.7	2.50	1.00	1.02	.797	.113	22.2
1939	22.8	24.0	20.0	2.40	1.00	1.05	.877	.105	22.8
1940	24.7	24.9	22.7	2.20	1.02	1.02	.934	.091	24.3
1941	28.7	31.4	28.7	2.60	1.00	1.10	1.00	.091	28.6
1942	33.8	33.3	31.4	2.70	1.04	1.02	.966	.083	32.5
1943	37.8	38.5	33.3	5.00	1.03	1.05	.905	.136	36.8
1944			34.7	4.00				.108	37.1
1945			35.1	5.60				.149	37.6
1946			39.5	5.80				.137	42.3
1947			55.4	8.30				.140	59.3
1948			71.0	14.6				.192	76.0
1949			62.9	17.6				.262	67.3
1950			71.3	18.3				.240	76.3
1951			82.8	33.6				.379	88.6
1952			81.8	27.4				.313	87.5
1953			79.9	25.9				.303	85.5
1954			71.1	27.2				.357	76.1
1955			78.1	26.1				.312	83.6
1956			78.0	27.2					83.5
1957			71.1	24.2					76.1

Col. E: Oregon / U.S.



Col. F: California / U.S.

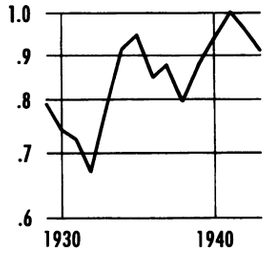


Col. C. "Compiled by the United States Department of Labor, BLS, from information furnished by the Western Pine Association. Complete specifications are as follows: Pine, ponderosa, boards, no. 3 common, 1″ x 8″, random length, surfaced on 2 or 4 sides, carlot or mixed car, f.o.b. mill."

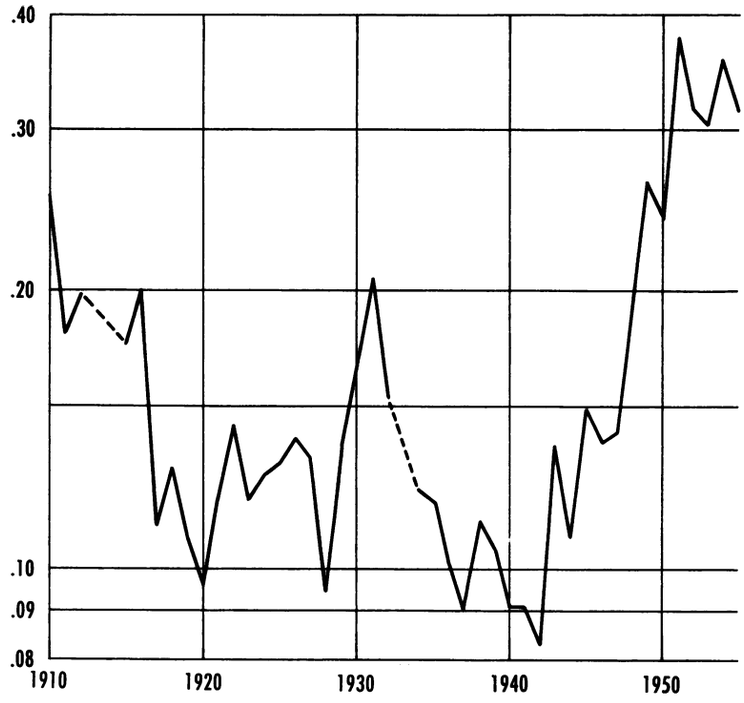
Col. D. The stumpage price is not a good measure of the "scarcity" of the resource: see Table FP-3.

Col. G. The rising ratio, illustrated in the Col. G chart, may be due to the falling quality of the average ponderosa pine lumber: A fixed quality, no. 3, reported by the BLS, would become a *relatively* better quality.

Col. G: BLS No. 3, common, f.o.b. / Steer, average price, f.o.b.



Col. H: Stumpage price / Lumber price



FP-7. OAK: Price

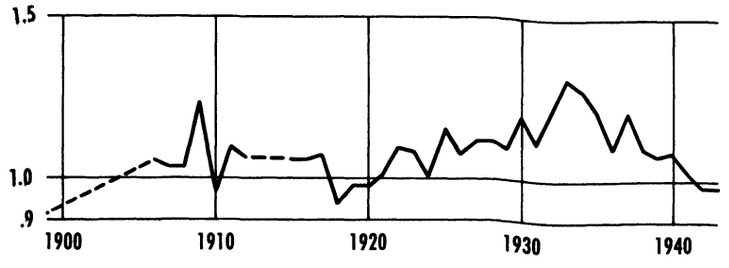
	Steer, average unit value ($ per 1000 bd. ft.)			Col. A / Col. G	Col. B / Col. G	Col. C / Col. G	Steer, average unit values, U.S. ($ per 1000 bd. ft.)	Col. G / Col. I	Preferred series, BLS no. 1 common (1926 = 100)
	Tennessee	West Virginia	Arkansas						
	A	B	C	D	E	F	G	H	I
1890									30.3
1891									30.4
1892									30.7
1893									30.9
1894									29.8
1895									28.9
1896									28.9
1897									28.9
1898									28.9
1899	12.62	11.66	11.65	.916	.846	.845	13.78	.443	31.1
1900									32.6
1901									29.4
1902									32.7
1903									35.8
1904	17.54	15.64	16.40	1.00	.893	.937	17.51	.472	37.1
1905									37.7
1906	22.76	19.01	20.05	1.05	.874	.921	21.76	.541	40.2
1907	21.88	19.44	21.94	1.03	.916	1.03	21.23	.481	44.1
1908	21.77	18.10	20.97	1.03	.853	.988	21.23	.539	39.4
1909	24.80	17.67	19.80	1.21	.862	.966	20.50	.531	38.6
1910	18.15	17.60	17.28	.967	.938	.921	18.76	.433	43.3
1911	20.68	18.60	18.96	1.08	.972	.991	19.14	.438	43.7
1912	20.79	20.15	20.33	1.06	1.03	1.04	19.63	.437	44.9
1913									56.1
1914									50.2
1915	19.62	19.03	18.40	1.05	1.02	.982	18.73	.391	47.9
1916	21.06	20.96	18.75	1.05	1.04	.935	20.06	.390	51.5
1917	26.07	25.37	24.05	1.06	1.04	.982	24.49	.409	59.9
1918	29.23	35.16	29.14	.940	1.13	.937	31.11	.446	69.7
1919	37.23	40.02	39.01	.983	1.06	1.03	37.87	.371	102
1920	46.00	59.51	43.42	.981	1.27	.926	46.88	.239	196
1921	31.00	35.44	27.24	1.01	1.16	.891	30.56	.341	89.5
1922	36.89	41.90	29.60	1.08	1.23	.870	34.01	.333	102
1923	41.76	46.81	34.19	1.07	1.20	.875	39.08	.362	108
1924	36.39	42.55	34.13	1.01	1.18	.945	36.13	.373	96.8
1925	42.10	40.31	35.32	1.14	1.09	.955	37.00	.387	95.6
1926	38.21	37.82	34.97	1.07	1.06	.980	35.67	.357	100
1927	39.15	43.11	33.78	1.10	1.21	.946	35.72	.370	96.4
1928	38.58	46.57	34.38	1.10	1.32	.976	35.23	.393	89.6
1929	41.52	44.15	36.52	1.08	1.15	.950	38.43	.440	87.3
1930	34.41	37.24	26.05	1.17	1.27	.889	29.29	.371	78.9
1931	30.33	34.61	23.13	1.10	1.25	.836	27.68	.395	70.1
1932	27.11	32.11	19.52	1.19	1.41	.855	22.84	.362	63.1
1933	36.77	33.82	21.51	1.29	1.19	.754	28.53	.421	67.8
1934	34.30	30.73	26.85	1.25	1.12	.975	27.54	.370	74.4
1935	32.38	31.77	23.95	1.19	1.17	.882	27.15	.403	67.4
1936	29.59	33.56	24.14	1.08	1.22	.879	27.46	.403	68.2
1937	34.82	35.85	25.74	1.18	1.21	.870	29.60	.367	80.7
1938	27.39	34.70	24.76	1.08	1.37	.974	25.41	.375	67.8
1939	27.81	32.00	26.63	1.06	1.22	1.01	26.32	.397	66.3
1940	27.92	34.07	25.56	1.07	1.30	.976	26.20	.433	60.5
1941	30.38	32.84	31.00	1.02	1.10	1.04	29.74	.421	70.6
1942	32.35	40.94	34.37	.981	1.24	1.04	32.96	.429	76.9
1943	39.74	44.81	40.51	.980	1.11	1.00	40.53	.457	88.7
1944									85.9
1945									85.9
1946									92.8
1947									124
1948									141
1949									137
1950									156
1951									163
1952									170
1953									171
1954									171
1955									171
1956									178
1957									179

FP-7, SOURCES

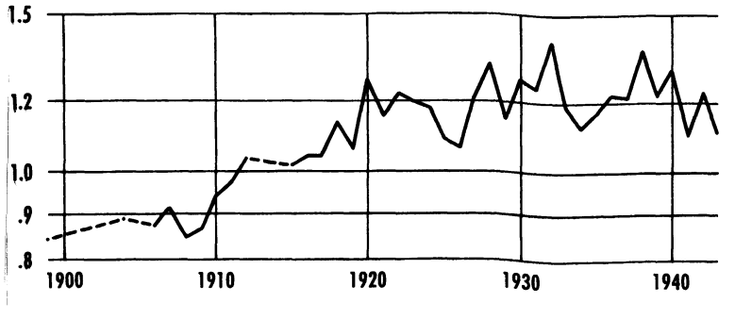
COL. A, Steer, Table 62, oak, average price, f.o.b. mill, Tennessee.
COL. B, *Ibid.*, oak, average price, f.o.b. mill, West Virginia.
COL. C, *Ibid.*, oak, average price, f.o.b. mill, Arkansas.
COL. D, Ratio, Col. A/Col. G.
COL. E, Ratio, Col. B/Col. G.
COL. F, Ratio, Col. C/Col. G.
COL. G, Steer, Table 62, oak, average price, f.o.b. mill, U.S.
COL. H, Ratio, Col. G/Col. I.
COL. I, Preferred series. BLS *Wholesale Prices* Bulls., various white oak series linked (Worksheet 1 of this table).

FP-7, NOTES

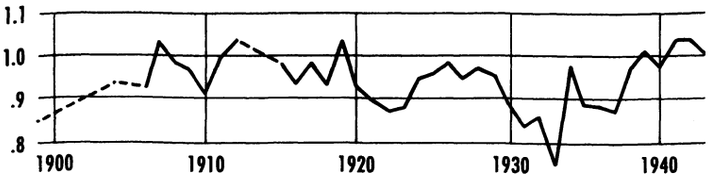
Col. D: Tennessee / U.S.



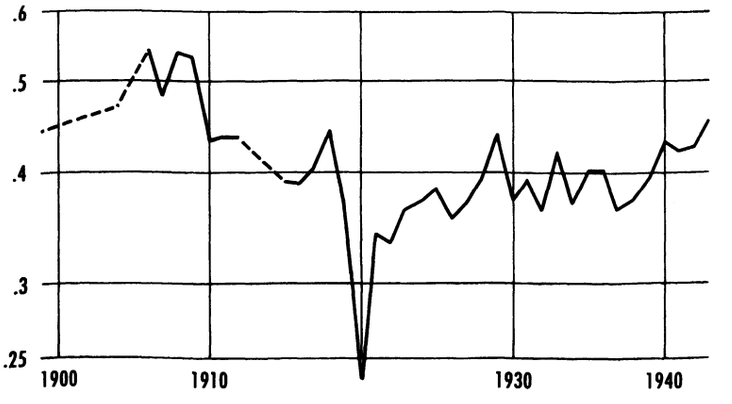
Col. E: West Virginia / U.S.



Col. F: Arkansas / U.S.



Col. H: Steer / BLS



The Steer series are average unit values, f.o.b. mills, and have been derived from mail questionnaires without follow-up canvass until 1942. They are dubious indicators of long-term price movements for other reasons, too: see Table FP-3.

The Bureau of Labor Statistics series suffers from at least two defects:

(1) Breaks in the series, or changes in specifications of the commodity quoted, which have not been bridged by the BLS through chaining its indexes. This raises a question about the preferred series given here.

(2) Apparent monopoly in the industry or inadequacy of the BLS "sample": quotations remain identically unchanged for many months or years at a time. Note, e.g., the identity of the indexes for 1953-55.

FP-7, WORKSHEET 1. OAK: Price (BLS Series)

	BLS, plain, white, F.A.S., N.Y. (1926 = 100)	Col. C / Col. A	BLS, plain, white, no. 1 common, Cincinnati (1926 = 100)	BLS, series 08-14-06 (1947-49 = 100)	Linked price series (1926 = 100)
	A	B	C	D	E
1890	31.6				30.3
1891	31.7				30.4
1892	32.1				30.8
1893	32.3				30.9
1894	31.1				29.8
1895	30.2				28.9
1896	30.2				28.9
1897	30.2				28.9
1898	30.2				28.9
1899	32.5				31.1
1900	34.0				32.6
1901	30.7				29.4
1902	34.1				32.7
1903	37.4				35.8
1904	38.7				37.1
1905	39.4				37.7
1906	42.0				40.2
1907	46.0				44.1
1908	41.1				39.4
1909	40.3				38.6
1910	45.2				43.3
1911	45.6				43.7
1912	46.9				44.9
1913	50.5	1.11	[a]56.1		56.1
1914	50.0	1.00	[a]50.2		50.2
1915	48.1	1.00	[a]47.9		47.9
1916	51.1	1.01	[a]51.5		51.5
1917	55.2	1.08	[a]59.9		59.9
1918	63.0	1.11	69.7		69.7
1919	85.1	1.20	102		102
1920	171	1.15	196		196
1921	107	.84	89.5		89.5
1922	108	.94	102		102
1923	113	.96	108		108
1924	100	.97	96.8		96.8
1925	99.8	.96	95.6		95.6
1926	100	1.00	100		100
1927	97.9	.98	96.4		96.4
1928	95.1	.94	89.6		89.6
1929	94.3	.93	87.3		87.3
1930	83.7	.94	78.9		78.9
1931			70.1		70.1
1932			63.1		63.1
1933			67.8		67.8
1934			74.4		74.4
1935			67.4		67.4
1936			68.2		68.2
1937			80.7		80.7
1938			67.8		67.8
1939			66.3		66.3
1940			[b]60.5		60.5
1941			70.6		70.6
1942			76.9		76.9
1943			88.7		88.7
1944			[b]85.9		85.9
1945			85.9		85.9
1946			92.8		92.8
1947			[b]124	96.3	124
1948			141	101.5	141
1949				102.2	137
1950				116.5	156
1951				121.8	163
1952				127.1	170
1953				127.6	171
1954				127.6	171
1955				128.1	171
1956				132.7	178
1957				133.4	179

FP-7, Worksheet, SOURCES

COL. A, BLS *Wholesale Prices* Bulls. Nos. 320, 493, and subsequent annual issues, oak, plain, white, 4/4, 1000 ft. F.A.S. mixed, New York, average price. (Index, 1926 = 100.)

COL. B, Ratio, Col. C/Col. A.

COL. C, BLS *Wholesale Prices* Bulls. No. 493 and subsequent annual issues, oak, plain, white, 4/4, 1000 ft., no 1 common, Cincinnati, average price (1913-18 figures are mill, average price). (Index, 1926 = 100.)

COL. D, BLS, *Prices and Price Relatives for Individual Commodities in the Revised Index,* 1947-50 and subsequent years, oak, white, plain. F.A.S.—1 face (code 08-14-06), index 1947-49 = 100.

COL. E, Linked series

1890-1912. Col. A times the 1926-30 average of Col. B (average, 0.958).

1913-48. Col. C, transcribed.

1949-57. Col. D, times the 1947-48 average ratio of Col. C/Col. D (average, 1.3385).

FP-7, Worksheet, NOTES

[a] Specifications were "Mill, average price."

[b] Series revised in 1940, 1944, and 1947.

FP-8. PULPWOOD AND WOOD PULP: Price

	Pulpwood				BLS, price index, wood pulp (1947-49 = 100)	Col. E / Col. D	Col. C / Col. H	Preferred series, price index, wood pulp (1947-49 = 100)
	U.S. Forest Service		Census, average unit cost ($ per cord)	Spencer, price index (1935-39 = 100)				
	Southern pine ($ per cord)	Spruce ($ per cord)						
	A	B	C	D	E	F	G	H
1899			4.95					
1900				89.9				34.4
1901				90.1				34.5
1902				82.6				31.6
1903				72.0				27.6
1904			6.82	70.5			.253	27.0
1905			5.56	82.1			.177	31.4
1906			7.21	77.9			.242	29.8
1907			8.17	83.7			.255	32.1
1908			8.38	86.3			.253	33.1
1909			8.62	86.9			.259	33.3
1910				81.3				31.1
1911				79.2				30.3
1912				85.5				32.7
1913				91.2	35.1	.385		34.9
1914			8.81	87.4	34.0	.389	.263	33.5
1915				83.9	33.4	.398		32.1
1916			8.76	148	60.2	.407	.154	56.7
1917			11.10	193	75.9	.393	.150	73.9
1918			13.93	152	60.5	.398	.239	58.2
1919			15.95	142	55.6	.392	.293	54.4
1920			19.05	290	103.8	.358	.172	111
1921			20.10	145	55.1	.380	.362	55.5
1922			16.20	109	40.4	.371	.388	41.7
1923			16.23	132	46.9	.355	.321	50.6
1924			16.07	108	40.7	.377	.388	41.4
1925			15.48	112	42.3	.378	.361	42.9
1926			14.96	118	45.2	.383	.331	45.2
1927			14.14	109	41.8	.383	.338	41.8
1928			13.55	105	40.1	.382	.338	40.1
1929			13.09	104	40.0	.385	.327	40.0
1930				102	38.9	.381		38.9
1931			10.94	93.8	35.9	.383	.305	35.9
1932				75.5	28.9	.383		28.9
1933		7.75	7.37	77.1	29.5	.383	.250	29.5
1934		7.25	7.73	92.2	35.3	.383	.219	35.3
1935		7.75	7.64	85.2	32.6	.383	.234	32.6
1936		7.50	7.71	88.8	34.0	.383	.227	34.0
1937		9.75	7.97	138	52.8	.383	.151	52.8
1938	3.60	8.50	8.10	101	38.7	.383	.209	38.7
1939	3.90	9.00	7.82	87.0	33.3	.383	.235	33.3
1940	4.20	9.00	7.99	132	50.7	.384	.158	50.7
1941	4.60	10.50		146	56.0	.384		56.0
1942	6.00	12.25		152	58.1	.383		58.1
1943	7.20	14.75		152	58.2	.383		58.2
1944	8.20	15.00		164	62.8	.383		62.8
1945	8.40	15.00		166	63.5	.383		63.5
1946	10.10	16.50		183	70.2	.384		70.2
1947	11.00	23.75	17.8	250	95.6	.382	.186	95.6
1948	11.70	22.25		280	107.3	.383		107
1949	11.00	18.50		253	97.0	.383		97.0
1950	11.90	19.50		250	95.6	.382		95.6
1951	13.80	22.50		299	114.4	.383		114
1952	13.90	26.50		291	111.5	.383		112
1953	13.90	24.75			109.0			109
1954	14.00	24.75	19.6		109.6		.178	110
1955	14.40	24.75			112.9			113
1956	15.40	26.75			117.7			118
1957	15.50	27.25			118.8			119

FP-8, SOURCES

COL. A, *Demand and Price Situation*, Nov. 1958, p. 29, pulpwood prices at local delivery points (dollars per standard cord, including bark), southern pine.

COL. B, *Ibid.*, Lake States spruce.

COL. C

1899, 1905-29. U.S. Department of Commerce, Bureau of the Census, *1929 Census of Manufactures*, Vol. II, p. 571, pulpwood consumption, cost (f.o.b. mill), average per cord.

1904. *1910 Census of Manufactures*, Vol. X, p. 756, Table 15, total cost, pulpwood divided by Table 16, wood consumed in the manufacture of wood pulp (cords).

1931, 1933, 1940. *Stat. Abstract 1949*, Table 832, pulpwood, mill cost, average per cord (source, Bureau of the Census).

1934-39, 1947. *1947 Census of Manufactures*, Vol. II, p. 321, Table 7-D, pulpwood, average cost per cord.

1954. *1954 Census of Manufactures*, Vol. II, Part 1, p. 26A-24, pulp mills, consumption of materials received from other establishments: sum of delivered costs divided by sum of quantities, for all pulpwood, including mill wastes.

COL. D, Spencer, *Raw Mat.*, Table B-1, p. 90, index of pulpwood prices.

COL. E

1913-25. BLS *Wholesale Prices* Bulls., wood pulp, chemical, sulphite, unbleached, 100 pounds, New York, linked to 1926-57 series at 1926.

1926-57. BLS *Wholesale Prices* Bulls., Code 09-1, revised wholesale price index, wood pulp.

COL. F, Ratio, Col. E/Col. D.

COL. G, Ratio, Col. C/Col. H.

COL. H, Preferred series

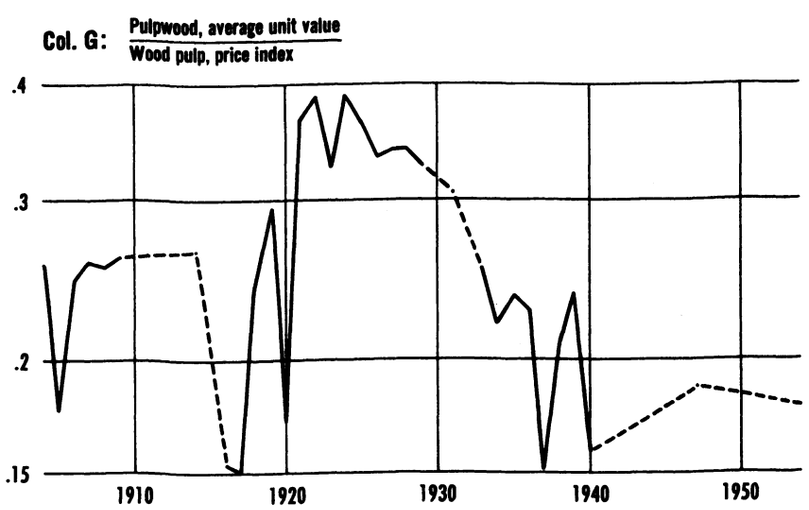
1900-25. Col. D times the average of the ratios in Col. F (0.383).

1926-57. Col. E, transcribed.

FP-8, NOTES

COL. D. The Spencer series was based on the Bureau of Labor Statistics series for woodpulp for 1926 and years following. The source for the Spencer series prior to 1926 is stated to be BLS, but we cannot find a corresponding index in BLS publications (note variations in Col. F ratio).

COL. G. The chart shows the ratio of the average unit value of pulpwood to the price index of wood pulp.



FP-9. VENEER AND PLYWOOD: Price

	Forest Service, Douglas fir peeler logs ($ per 1000 bd. ft.)	Col. A / Col. C	Preferred series, wholesale price index (1947-49 = 100)
	A	B	C
1936	25.0	.74	33.6
1937	27.5	.82	33.5
1938	29.0	.88	32.9
1939	27.5	.82	33.7
1940	28.0	.80	35.1
1941	32.0	.82	39.1
1942			38.8
1943			42.8
1944			43.7
1945			43.7
1946			54.2
1947	56.4	.63	89.3
1948	79.7	.70	113.5
1949	74.9	.77	97.2
1950	89.4	.80	112.0
1951	96.5	.82	117.3
1952	96.0	.90	107.2
1953	96.3	.90	107.1
1954	94.8	.92	103.0
1955	96.3	.91	106.1
1956	99.1	1.02	97.4
1957			88.7

FP-10. NAVAL STORES: Price

	Turpentine ($ per gallon)	Rosin ($ per 100 lb. net)	Preferred series, all naval stores, price ($ mil., 1954 output)
	A	B	C
1900	.359		
1901	.283	.61	14.8
1902	.414	.74	20.2
1903	.454	1.05	24.5
1904	.465	1.30	27.4
1905	.570	1.83	35.9
1906	.556	1.96	36.8
1907	.490	1.93	34.4
1908	.331	1.46	24.8
1909	.423	2.24	35.5
1910	.617	2.61	45.2
1911	.481	2.97	44.6
1912	.359	3.00	41.1
1913	.327	1.96	29.7
1914	.388	1.83	30.3
1915	.370	1.76	29.0
1916	.370	2.54	36.8
1917	.358	2.58	36.9
1918	.508	4.92	64.8
1919	1.212	7.49	112.3
1920	1.393	6.07	103.6
1921	.566	1.83	35.8
1922	1.138	2.26	57.8
1923	.892	2.03	47.9
1924	.753	2.44	47.7
1925	.907	4.83	76.2
1926	.766	5.30	76.6
1927	.454	3.63	50.2
1928	.445	3.60	49.7
1929	.423	3.28	45.8
1930	.333	2.18	32.1
1931	.341	1.69	27.4
1932	.328	1.23	22.4
1933	.367	1.69	28.2
1934	.396	1.98	32.0
1935	.376	1.97	31.3
1936	.315	2.79	37.6
1937	.254	3.20	39.7
1938	.166	2.18	26.9
1939	.193	2.37	29.7
1940	.240	1.98	27.2
1941	.527	2.42	40.5
1942	.591	3.22	50.4
1943	.679	3.97	60.6
1944	.779	5.61	80.1
1945	.791	6.50	89.3
1946	.967	7.43	104.2
1947	.627	7.83	97.6
1948	.428	7.39	87.0
1949	.384	6.47	76.5
1950	.551	6.31	80.0
1951	.763	8.73	110.8
1952	.534	7.53	91.8
1953	.516	7.72	93.0
1954	.519	7.91	95.0
1955	.556	8.45	101.6
1956	.555	8.37	100.7
1957	.543	7.90	95.7

FP-9, SOURCES

Col. A, *Hist. Forestry Stat.*, p. 20, Douglas fir log prices, peeler logs (dollars per thousand board feet).

Col. B, Ratio, Col. A/Col. C.

Col. C, Preferred series

1936-55. U.S. Forest Service, *Price Trends and Relationships for Forest Products*, p. 55, Table 5, wholesale price index, plywood.

1956-57. BLS *Wholesale Prices* Bulls., series 08-31-01.

FP-9, NOTES

Col. C. Footnote to U.S. Forest Service, *op. cit.*, Table 5, states: "Softwood, plywood, interior grade A-D. 1947-55, Bureau of Labor Statistics price index; 1936-46 approximation based on Bureau of Labor Statistics data."

FP-10, SOURCES

Col. A, Turpentine

1900-49. U.S. Department of Agriculture, Agricultural Marketing Service, *Naval Stores Statistics 1900-1954*, pp. 22-23, season average price, bulk gum spirits of turpentine (years beginning April 1).

1950-57. *Demand and Price Situation for Forest Products*, Nov. 1959, pp. 32-33.

Col. B, Rosin

1900-49. USDA, *loc. cit.*, season average price, gum rosin.

1950-57. *Demand and Price Situation*, Nov. 1959, p. 31.

Col. C, Preferred series, naval stores, aggregate price of 1954 outputs. Col. A times 30.9 million (gal.) plus Col. B times 9.98 million (units of 100 lb.) (1954 outputs, from Table FO-14, converted from barrels of 50 gal. and drums of 520 lb.).

FP-10, NOTES

The values in the price index may be a little too high, as all naval stores are priced at the gum product prices—including the gum content of tall oil.

We do not give price indexes computed with 1902 and 1929 output weights, since they would move almost exactly as the 1954-weighted index. The reason for this is that the relative outputs of rosin and turpentine were almost the same throughout, being fixed by the composition of the gum (or wood) from which both are derived.

Forestry: Output (FO)

FO-1. FOREST PRODUCTS: Output

	Lumber	Pulpwood	Veneer logs	Minor products	Fuelwood	Naval stores	Preferred series, all forest products ($ mil.)		
							1902 prices	1929 prices	1954 prices (sum of Cols. A-F)
	(million dollars, 1954 prices)								
	A	B	C	D	E	F	G	H	I
1869	704						377	1225	2208
1870	(733)				1178		(395)	(1275)	(2299)
1871	(762)				(1178)		(398)	(1292)	(2334)
1872	(791)				(1178)		(403)	(1307)	(2369)
1873	(820)				(1178)		(407)	(1323)	(2404)
1874	(849)				(1178)		(411)	(1339)	(2438)
1875	(878)				1178		(415)	(1354)	(2473)
1876	(907)				(1174)		(418)	(1368)	(2503)
1877	(936)				(1170)		(421)	(1379)	(2534)
1878	(965)				(1167)		(424)	(1394)	(2565)
1879	996	1			(1163)		427	1405	2598
1880	(1045)	(2)			1159		(434)	(1429)	(2654)
1881	(1094)	(2)			(1148)		(438)	(1447)	(2700)
1882	(1143)	(3)			(1136)		(442)	(1466)	(2745)
1883	(1192)	(4)			(1125)		(447)	(1482)	(2792)
1884	(1241)	(5)			(1113)		(450)	(1500)	(2838)
1885	(1289)	(5)			1102		(454)	(1518)	(2882)
1886	(1338)	(6)			(1087)		(457)	(1532)	(2924)
1887	(1387)	(7)			(1072)		(461)	(1549)	(2967)
1888	(1436)	(7)			(1056)		(463)	(1563)	(3006)
1889	1485	(8)			(1041)		469	1584	3048
1890	(1530)	(10)			1026		(471)	(1597)	(3087)
1891	(1574)	(11)			(1011)		(476)	(1611)	(3123)
1892	(1619)	(13)			(996)		(478)	(1626)	(3161)
1893	(1663)	(14)			(980)		(481)	(1639)	(3196)
1894	(1708)	(16)			(965)		(484)	(1654)	(3235)
1895	(1753)	(17)			950		(486)	(1667)	(3272)
1896	(1797)	(19)			(943)		(491)	(1686)	(3319)
1897	(1842)	(20)			(936)		(496)	(1705)	(3366)
1898	(1886)	(22)			(929)		(502)	(1726)	(3413)
1899	1931	23			(922)		506	1745	3460
1900	2013	25	3	511	912	84	516	1785	3548
1901	2113	28	3	522	874	81	521	1811	3621
1902	2222	29	7	532	855	79	533	1854	3724
1903	2288	32	10	550	817	74	535	1869	3771
1904	2365	35	13	560	798	81	544	1904	3852
1905	2393	36	23	574	760	80	542	1904	3866
1906	2530	41	40	630	741	80	564	1990	4062
1907	2530	43	44	739	722	90	575	2036	4368
1908	2310	37	47	676	760	102	551	1935	3932
1909	2448	45	54	718	722	81	563	1991	4068
1910	2448	44	60	725	741	84	568	2009	4102
1911	2365	47	54	707	760	90	562	1978	4023
1912	2475	49	54	704	722	101	569	2009	4105
1913	2420	50	54	697	722	96	561	1978	4039
1914	2228	51	57	672	760	77	540	1898	3845
1915	2035	57	57	658	760	73	515	1806	3640
1916	2189	62	60	676	760	86	540	1894	3833
1917	1969	66	60	676	760	70	510	1789	3601
1918	1755	63	64	672	817	50	494	1716	3421
1919	1903	62	70	669	779	55	502	1763	3538
1920	1925	70	54	662	779	69	508	1774	3559
1921	1595	52	50	602	817	69	465	1608	3185
1922	1936	63	60	592	722	78	491	1713	3451
1923	2255	65	77	595	646	86	518	1825	3724
1924	2173	66	77	578	646	81	505	1779	3621
1925	2255	70	90	522	608	77	502	1772	3622
1926	2189	77	97	522	589	84	494	1741	3558
1927	2046	77	117	501	608	105	485	1698	3454
1928	2024	81	117	483	608	94	478	1678	3407
1929	2129	90	134	483	608	104	497	1744	3548
1930	1617	85	104	417	722	99	447	1533	3044
1931	1100	84	84	340	836	81	393	1316	2525
1932	743	68	80	291	950	83	366	1192	2215
1933	946	83	84	291	950	92	396	1301	2446
1934	1034	84	87	298	912	89	398	1320	2504
1935	1260	92	97	312	855	91	420	1404	2707
1936	1518	105	110	340	817	93	450	1526	2983
1937	1595	125	131	357	779	102	462	1572	3089
1938	1364	111	131	322	817	104	437	1467	2849
1939	1584	136	141	336	798	90	463	1576	3085
1940	1716	174	157	336	741	85	475	1630	3209
1941	2008	199	178	361	684	85	509	1763	3515
1942	1997	209	204	350	551	83	484	1687	3394
1943	1887	190	188	322	532	73	455	1587	3192
1944	1810	214	181	315	551	66	452	1570	3137
1945	1546	214	168	294	570	72	422	1449	2864
1946	1876	238	171	312	513	86	459	1596	3196
1947	1947	259	184	329	513	99	480	1662	3331
1948	2035	280	194	298	513	103	492	1706	3423
1949	1771	246	214	259	532	101	457	1568	3123
1950	2090	290	231	270	437	108	489	1698	3426
1951	2046	351	265	256	418	103	494	1713	3439
1952	2063	351	281	245	380	87	485	1691	3407
1953	2019	368	318	263	399	87	493	1719	3454
1954	2002	378	328	259	380	95	492	1712	3442
1955	2057	433	385	273	342	97	511	1783	3587
1956	2101	493	389	256	342	99	528	1837	3680
1957	1903	482	372	238	323	93	491	1710	3411

FO-1, SOURCES

Computation of Index in 1954 Prices:

COL. A, Lumber. Table FO-2, Col. C (1869-99 interpolated straight-line for missing years), times $55/1,000 board feet.

COL. B, Pulpwood. Table FO-10, Col. C (1879-99 interpolated straight-line for missing years), times $14/cord.

COL. C, Veneer logs. Table FO-11, Col. A, times $670/1,000 cubic feet.

COL. D, Minor timber products. Table FO-12, Col. A, times $350/1,000 cubic feet.

COL. E, Fuelwood. Table FO-13, Col. D, times $190/1,000 cubic feet.

COL. F, Naval stores. Table FO-14, Col. C, times 1.00.

COLS. G and H, Preferred series, output of all forest products in 1902 and 1929 prices. Computed exactly as Col. I, except that estimates of 1902 and 1929 prices were used as weights for each product in the computation.

COL. I, Preferred series, output of all forest products, 1954 prices. Sum of Cols. A through F, linked for missing series in early years.

FO-1, NOTES

( ) Interpolation.

Our aggregate value for 1954 is a little over $3 billion, excluding fuelwood; this compares with a little over $2.5 billion estimated by the Forest Service in *Demand and Price Situation for Forest Products,* Nov. 1958, p. 21. At least half our difference probably lies in the lumber aggregate; some is in naval stores, as we have set the values at the level of the final products; and some may be in veneer logs and minor products. This excess value, if there is any, does not necessarily impair the movement of the indexes in Cols. G, H, and I, however, as each year's total might be too high by nearly the same percentage.

The price weights are taken from the corresponding price tables herein, with the following modifications:

COL. A. Lumber is weighted at sawlogs price (Table FP-2, Col. D), in order to approximate the value of the raw material at the mill, rather than the value of the manufactured product. Since the basic data lack definition as to log scale used and other specifications, the price weight used here may be in error 25% or more.

COL. B. We have used the price of southern pine pulpwood at local delivery points, rather than the value delivered at the mill. Since pulp mills are large, and often far removed from the sources of supply, the transportation cost is more than for most other forest products. The price of southern pine seems fairly representative of pulpwood prices. See prices in Table FP-8, and delivered costs given in *1954 Census of Manufactures,* Vol. II, Part 1, p. 26A-24.

COL. C. We do not have a price series for veneer logs, but have used price weights a little less than double the price of sawlogs (Col. A), since Douglas fir peeler logs ran 1.8 to 2.0 times the price of sawlogs in 1936-56, as reported by the Forest Service in *Hist. Forestry Stat.,* p. 20. Other veneer logs were sold at prices from half to three times the Douglas fir price: See *Demand and Price Situation for Forest Products,* Nov. 1959, p. 12.

COL. D. We have estimated the price of minor products to be about the same as that of sawlogs, on the basis that these products require logs of about the same quality, on the average.

COL. E. We have used the price estimates for pulpwood at local delivery points, in the absence of any price quotations of national significance for fuelwood. Cord price converted to price per cubic foot at ratio 1/75 (U. S. Forest Service, *Timber Resources for America's Future,* 1958, p. 642.)

COL. F. We have used the 1954-weighted index of Table FO-14. This somewhat overweights the naval stores relative to the other forest products, as the prices of finished turpentine and rosin are used. The amounts involved are, however, small.

COLS. G and H. The price weights used in the computation of the 1902- and 1929-weighted indexes are as follows:

	Commodity	*1902 price weights*	*1929 price weights*	*Units*
A	Lumber	$ 6.6	$ 25.0	1,000 bd. ft.
B	Pulpwood	3.0	9.3	cord
C	Veneer logs	80.0	300.0	1,000 cu. ft.
D	Minor products	40.0	160.0	1,000 cu. ft.
E	Fuelwood	40.0	120.0	1,000 cu. ft.
F	Naval stores	.228 (x FO-14, C)	.487 (x FO-14, C)	

These price weights were arrived at as indicated above for Cols. A through F, with the following modifications:

B. Pulpwood prices at local delivery points were extrapolated from 1954 to 1929 and 1899 by means of the average value at mills, from the *Census of Manufactures* data given by pulp mills. The result for 1899 was higher than our figure for sawlogs, when converted to a common unit, so it was lowered to be equal in price to sawlogs.

F. The naval stores index is given in 1954 prices only, because the 1929- and 1902-weighted indexes would move almost exactly the same way. The factors applied here to the 1954-weighted index are used to reduce the values to approximate the 1929 and 1902 values. Each was computed by multiplying the prices in Table FP-10 by the outputs in Table FO-14 for 1902 and 1929 respectively, and dividing by the aggregate values in the 1954-weighted index for 1902 and for 1929 respectively.

Some minor products are not taken into account here, such as tanbark, roots and herbs, etc.

FO-2. LUMBER: Output

	Nat. Lumber Mfrs. Assn. (billion bd. ft.)	Col. A / Col. C	Preferred series, Forest Service and Stat. Ab. (billion bd. ft.)
	A	B	C
1869	12.8	1.00	12.8
1879	18.1	1.00	18.1
1889	27.0	1.00	27.0
1899	35.1	1.00	35.1
1900			36.6
1901			38.4
1902			40.4
1903			41.6
1904	34.1	.793	43.0
1905	30.5	.701	43.5
1906	37.6	.817	46.0
1907	40.3	.876	46.0
1908	33.2	.791	42.0
1909	44.5	1.00	44.5
1910	40.0	.899	44.5
1911	37.0	.860	43.0
1912	39.2	.871	45.0
1913	38.4	.873	44.0
1914	37.3	.921	40.5
1915	31.2	.843	37.0
1916	34.8	.874	39.8
1917	33.2	.927	35.8
1918	29.4	.922	31.9
1919	34.6	1.00	34.6
1920	29.9	.854	35.0
1921	27.0	.931	29.0
1922	31.6	.898	35.2
1923	37.2	.907	41.0
1924	35.9	.909	39.5
1925	38.3	.934	41.0
1926	36.9	.929	39.8
1927	34.5	.925	37.2
1928	34.1	.927	36.8
1929	36.9	.954	38.7
1930	26.1	.888	29.4
1931	16.5	.825	20.0
1932	10.8	.800	13.5
1933	14.7	.855	17.2
1934	15.5	.824	18.8
1935	19.5	.852	22.9
1936	24.4	.884	27.6
1937	26.0	.897	29.0
1938	21.6	.871	24.8
1939	25.1	.872	28.8
1940	28.9	.926	31.2
1941	33.6	.921	36.5
1942	36.3	1.00	36.3
1943	34.3	1.00	34.3
1944	32.9	1.00	32.9
1945	28.1	1.00	28.1
1946	34.1	1.00	34.1
1947	35.4	1.00	35.4
1948	36.8	1.01	37.0
1949	32.9	1.02	32.2
1950	38.9	1.02	38.0
1951	37.5	1.01	37.2
1952	37.5	1.00	37.5
1953	36.7	1.00	36.7
1954	36.4	1.00	36.4
1955	38.5	1.03	37.4
1956			38.2
1957			34.6

FO-2, SOURCES

COL. A, National Lumber Manufacturers Association, *Lumber Industry Facts 1957*, Table 19, total lumber production.
COL. B, Ratio, Col. A/Col. C.
COL. C, Preferred series
1869-99 and 1904-54. *Hist. Forestry Stat.*, p. 14.
1900-03. Extrapolated from 1904 by "new supply" of sawlogs, from *ibid.*, p. 19.
1955-57. *Stat. Abstract 1959*, p. 699.

FO-2, NOTES

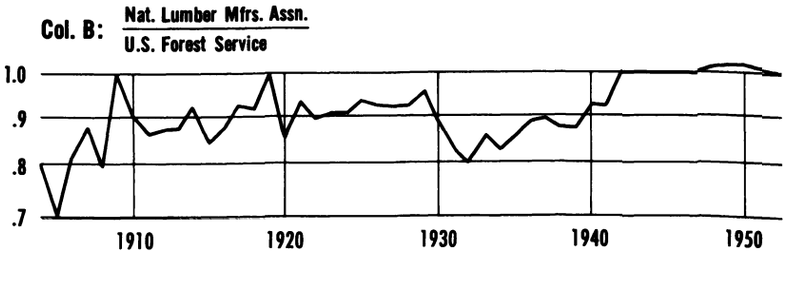
From Henry B. Steer, *Lumber Production in the United States, 1799-1946* (U.S. Forest Service, 1948), pp. 1-6:

"The Bureau of the Census was primarily responsible for the collection and publication of [lumber] statistics decennially from 1809 through 1899 and annually from 1904 through 1946 with the exception of 1905, 1906, 1913, 1915 to 1918, inclusive, and 1920. The Forest Service was primarily responsible for the collection and publication of the data for 7 of the 8 years just listed, and the Bureau of Crop Estimates collected the basic information for the year 1913. . . .

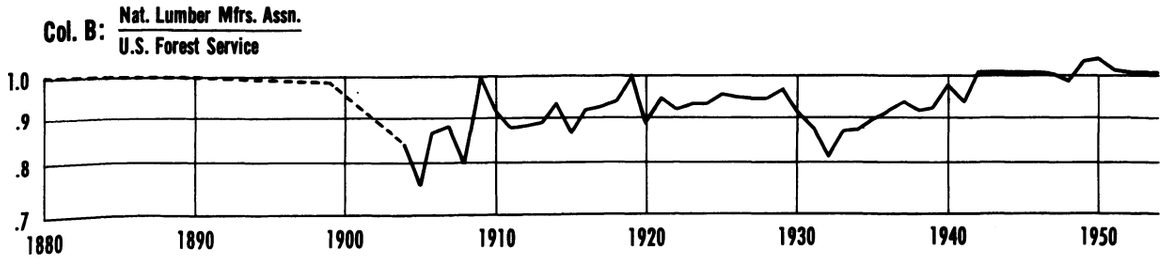
"Except in the decennial census where there was some follow-up of nonreporting mills by field agents, lumber production and price statistics were obtained by means of a mail census of the entire country through 1912. Since 1912 the census in the western United States has been conducted by mail supplemented by a field census to obtain reports from nonrespondents. In the Eastern States production statistics were obtained by a mail census through 1941. Field canvasses were made in the East in 1940, 1941 and 1942. As a result of these, thousands of small sawmills not previously included in the general census were covered for the first time, and many larger mills were also located. . . . These field enumerations of the Eastern States resulted in such great increases in lumber production . . . that it was readily evident that figures for the years when production was obtained solely by mail were not usable as statistics until revised to include the nonreported production."

Consequently, the reported figures for the Eastern States were revised upwards for all but the decennial census years 1869-1919 and the years 1942 and following. Between 1904 and 1928, production "was increased, largely on the basis of judgment, by quantities designed to include the production of nonreporting mills." For the years 1929-39, the number of active but nonreporting mills in each state was estimated and then distributed by size class. Production was estimated from this and added to the previous totals. Partial field canvasses in 1940 and 1941 were supplemented by estimates of production in the states not so covered.

COL. A represents the figures as originally reported and Col. C the figures as adjusted by Steer. The relationship between the two is shown in the chart.



FO-3. SOFTWOODS: Output



	Nat. Lumber Mfrs. Assn. (billion bd. ft.)	Col. A / Col. C	Preferred series, Forest Service (billion bd. ft.)
	A	B	C
1869	9.25	1.00	9.25
1879	13.3	1.00	13.3
1889	20.0	1.00	20.0
1899	26.2	.992	26.4
1904	27.3	.840	32.5
1905	24.9	.755	33.0
1906	30.2	.865	34.9
1907	31.0	.888	34.9
1908	25.5	.799	31.9
1909	33.9	1.00	33.9
1910	31.2	.918	34.0
1911	28.9	.876	33.0
1912	30.5	.879	34.7
1913	30.3	.888	34.1
1914	29.4	.933	31.5
1915	25.4	.861	29.5
1916	28.6	.914	31.3
1917	27.1	.928	29.2
1918	24.1	.938	25.7
1919	27.4	1.00	27.4
1920	24.3	.880	27.6
1921	22.2	.949	23.4
1922	26.6	.920	28.9
1923	30.9	.931	33.2
1924	29.4	.933	31.5
1925	31.7	.952	33.3
1926	30.5	.950	32.1
1927	28.4	.947	30.0
1928	28.3	.946	29.9
1929	29.8	.968	30.8
1930	21.3	.918	23.2
1931	13.9	.874	15.9
1932	8.75	.810	10.8
1933	11.9	.862	13.8
1934	12.7	.870	14.6
1935	16.2	.890	18.2
1936	20.2	.918	22.0
1937	21.6	.935	23.1
1938	18.3	.915	20.0
1939	21.4	.918	23.3
1940	24.9	.973	25.6
1941	28.0	.936	29.9
1942	29.5	1.00	29.5
1943	26.9	1.00	26.9
1944	25.2	1.00	25.2
1945	21.1	1.00	21.1
1946	25.9	1.00	25.9
1947	27.9	1.00	28.0
1948	29.0	.986	29.6
1949	27.2	1.03	26.5
1950	31.5	1.03	30.6
1951	29.8	1.01	29.5
1952	30.2	1.00	30.3
1953	29.6	1.00	29.5
1954	29.3	1.00	29.3
1955	31.5		29.8
1956			30.2
1957			27.1

FO-3, SOURCES

COL. A, National Lumber Manufacturers Association, *Lumber Industry Facts 1957*, Table 19, lumber production of softwoods.

COL. B, Ratio, Col. A/Col. C.

COL. C, Preferred series

1869-1938. Steer, Table 1, estimated production, softwoods.

1939-44. *Ag. Stat. 1956*, Table 751, production, softwoods.

1945-57. *Demand and Price Situation for Forest Products*, Nov. 1959, p. 25.

FO-3, NOTES

See notes to Table FO-2.

COL. A makes use of the "reported series." The same series is also carried by *Business Statistics* and *Statistical Abstracts*.

COL. C represents the "reported series" adjusted (by Steer) for undercoverage in the Eastern States. See notes to Table FO-2.

FO-4. YELLOW PINE: Output

	Forest Service & Dept of Commerce (bil. bd. ft.)
	A
1869	1.38
1879	2.38
1889	4.22
1899	9.67
1904	11.5
1905	8.77
1906	11.7
1907	13.2
1908	11.2
1909	16.3
1910	14.1
1911	12.9
1912	14.7
1913	14.8
1914	14.5
1915	12.2
1916	13.4
1917	12.5
1918	9.94
1919	13.1
1920	8.96
1921	11.0
1922	11.5
1923	12.9
1924	12.5
1925	13.2
1926	11.8
1927	10.9
1928	10.6
1929	11.6
1930	7.45
1931	4.43
1932	3.07
1933	4.45
1934	4.47
1935	5.96
1936	7.11
1937	7.69
1938	7.20
1939	7.75
1940	10.2
1941	10.3
1942	11.8
1943	9.96
1944	8.13
1945	7.21
1946	9.38
1947	9.47
1948	9.11
1949	8.26
1950	9.94
1951	8.50
1952	8.57
1953	7.58
1954	7.33
1955	7.36
1956	7.74
1957	6.72

FO-4, SOURCES

COL. A

1869-79, 1889, 1899, 1904-28. Steer, Table 83, yellow pine (Eastern), quantity produced.

1929-54. *Bus. Stat. 1957*, p. 151, southern pine, production (adjusted from monthly to annual figures) (source, Bureau of the Census and Southern Pine Association).

1955-57. *Stat. Abstract 1959*, p. 699.

FO-4, NOTES

The overlap for Steer and *Business Statistics*, 1929-45, shows identical figures. The data prior to 1942, except for decennial census years, were taken from mail questionnaires without follow-up field canvass. Field canvasses in 1940 and 1942 revealed "thousands of small sawmills not previously included in the annual census. . . . These field enumerations of the Eastern States resulted in such great increases in lumber production . . . that it was readily evident that figures for the years when production was obtained solely by mail were not usable statistics until revised to include the nonreported production" (Steer, p. 2). Unfortunately, no revisions have been made of the series for yellow pine, and no other series are available. (See also notes to Table FO-2.)

FO-5. DOUGLAS FIR: Output

	Forest Service & Stat. Ab. (billion bd. ft.)
	A
1869	.196
1879	.289
1889	1.21
1899	1.74
1904	2.93
1905	4.32
1906	4.97
1907	4.75
1908	3.68
1909	4.86
1910	5.20
1911	5.05
1912	5.18
1913	5.56
1914	4.76
1915	4.12
1916	5.41
1917	5.35
1918	5.82
1919	5.90
1920	6.96
1921	4.64
1922	6.83
1923	8.22
1924	7.46
1925	8.15
1926	8.81
1927	8.44
1928	8.45
1929	8.69
1930	6.45
1931	4.65
1932	2.90
1933	3.97
1934	4.07
1935	4.77
1936	6.32
1937	6.55
1938	5.22
1939	6.49
1940	7.12
1941	8.53
1942	8.55
1943	7.95
1944	7.86
1945	6.24
1946	7.64
1947	9.04
1948	9.79
1949	9.07
1950	9.98
1951	10.4
1952	10.6
1953	10.4
1954	10.3
1955	10.4
1956	10.2
1957	9.26

FO-5, SOURCES

COL. A

1869-1946. Steer, Table 72, Douglas fir produced.
1947-54. *Hist. Forestry Stat.*, p. 16.
1955-57. *Stat. Abstract 1959*, p. 699.

FO-5, NOTES

Steer and the Forest Service give identical figures for the years of overlap, 1899, 1919, 1929, 1939, and 1945. "Except in the decennial censuses where there was some follow-up of nonreporting mills by field agents, lumber production and price statistics were obtained by means of a mail canvass of the entire country through 1912. Since 1912 the census in the Western United States has been conducted by mail supplemented by a field canvass to obtain reports from nonrespondents" (Steer, p. 2).

The series does not suffer from the same degree of inaccuracy known to exist in the series representing output of species in the Eastern States.

The "Douglas fir production" series given in *Bus. Stat.* (1957 ed., p. 151) runs somewhat higher; it includes all softwoods produced in the Douglas fir region.

FO-6. WHITE PINE: Output

	Forest Service and Stat. Ab. (billion bd. ft.)
	A
1869	5.81
1879	7.89
1889	9.46
1899	7.50
1904	5.33
1905	4.98
1906	4.58
1907	4.19
1908	3.34
1909	3.90
1910	3.35
1911	3.23
1912	3.14
1913	2.57
1914	2.63
1915	2.29
1916	2.33
1917	2.05
1918	1.97
1919	1.72
1920	1.38
1921	1.27
1922	1.38
1923	1.57
1924	1.53
1925	1.52
1926	1.37
1927	1.34
1928	1.37
1929	1.25
1930	1.11
1931	.716
1932	.433
1933	.532
1934	.756
1935	.854
1936	.998
1937	1.01
1938	.805
1939	1.00
1940	1.12
1941	1.42
1942	1.48
1943	1.40
1944	1.55
1945	1.27
1946	1.42
1947	1.37
1948	n.a.
1949	1.12
1950	1.29
1951	1.32
1952	1.24
1953	1.35
1954	1.34
1955	1.10
1956	1.11
1957	.96

FO-7. PONDEROSA PINE: Output

	Forest Service and Stat. Ab. (billion bd. ft.)
	A
1869	.285
1879	.339
1889	.695
1899	.946
1904	1.29
1905	.989
1906	1.39
1907	1.53
1908	1.28
1909	1.50
1910	1.56
1911	1.33
1912	1.22
1913	1.26
1914	1.33
1915	1.25
1916	1.68
1917	1.87
1918	1.71
1919	1.76
1920	2.78
1921	1.43
1922	2.08
1923	2.80
1924	2.60
1925	3.13
1926	3.17
1927	2.80
1928	2.98
1929	3.29
1930	2.59
1931	1.82
1932	1.29
1933	1.69
1934	1.81
1935	2.53
1936	2.98
1937	3.31
1938	2.73
1939	3.36
1940	3.61
1941	4.25
1942	4.03
1943	3.87
1944	3.77
1945	3.06
1946	3.63
1947	3.84
1948	n.a.
1949	3.72
1950	3.86
1951	3.71
1952	3.50
1953	3.78
1954	3.76
1955	3.66
1956	3.57
1957	3.16

FO-6 (White Pine), SOURCES

COL. A

1869-1945. Steer, Table 82, white pine produced.

1946-57. *Stat. Abstract 1949*, Table 824; *1951*, Table 779; *1957*, Table 897; and *1959*, p. 699.

FO-6, NOTES

The notes to Table FO-4 also apply to this series.

Figures 3% and 15% higher are given for 1899 and 1939 by the 1957 *Stat. Abstract* (Table 897), reporting data of Census and Business and Defense Services Administration. The 1919 and 1929 figures are identical to those given here.

Hist. Forestry Stat. gives a somewhat different series (p. 16), in most years lower. This is presumably because it covers "Eastern white pine" only.

FO-7 (Ponderosa Pine), SOURCES

COL. A

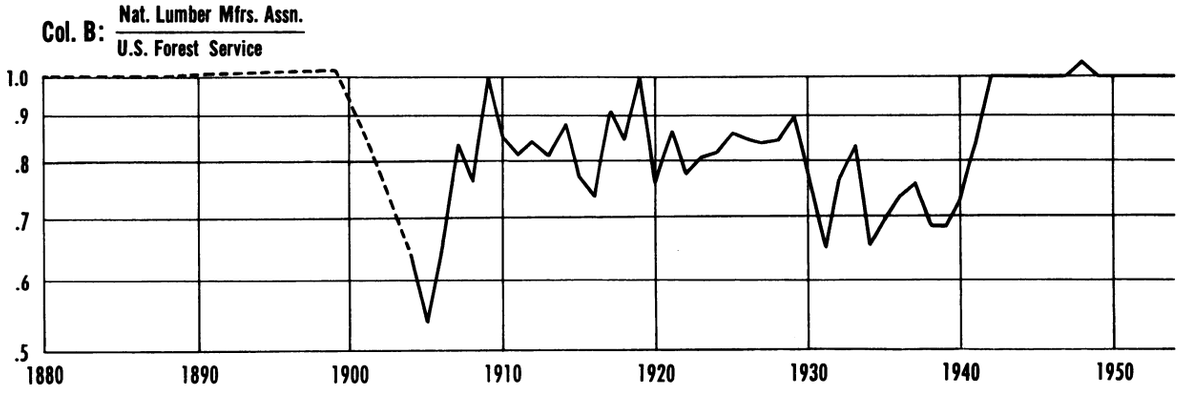
1869-1946. Steer, Table 76, ponderosa pine produced.

1947-57. *Stat. Abstract 1953*, Table 823; *1957*, Table 897; and *1959*, p. 699: ponderosa pine production.

FO-7, NOTES

The notes to Table FO-5 also apply to this series.

FO-8. HARDWOODS: Output



	Nat. Lumber Mfrs. Assn. (billion bd. ft.)	Col. A / Col. C	Preferred series, Forest Service and Census (billion bd. ft.)
	A	B	C
1869	3.50	1.00	3.50
1879	4.79	1.00	4.79
1889	7.01	1.00	7.01
1899	8.90	1.02	8.71
1904	6.78	.646	10.5
1905	5.59	.532	10.5
1906	7.32	.659	11.1
1907	9.25	.833	11.1
1908	7.68	.760	10.1
1909	10.6	1.00	10.6
1910	8.86	.844	10.5
1911	8.10	.812	9.98
1912	8.63	.838	10.3
1913	8.08	.813	9.94
1914	7.94	.880	9.02
1915	5.80	.770	7.53
1916	6.22	.733	8.48
1917	6.06	.910	6.66
1918	5.26	.846	6.22
1919	7.14	1.00	7.14
1920	5.62	.760	7.39
1921	4.78	.860	5.56
1922	4.92	.777	6.33
1923	6.26	.805	7.78
1924	6.52	.820	7.95
1925	6.63	.859	7.72
1926	6.47	.844	7.67
1927	6.09	.838	7.27
1928	5.80	.841	6.90
1929	7.07	.894	7.91
1930	4.73	.772	6.13
1931	2.67	.650	4.11
1932	2.08	.765	2.72
1933	2.80	.833	3.36
1934	2.76	.656	4.21
1935	3.29	.693	4.75
1936	4.11	.734	5.60
1937	4.41	.752	5.86
1938	3.35	.688	4.87
1939	3.74	.685	5.46
1940	4.03	.727	5.54
1941	5.58	.837	6.67
1942	6.82	1.00	6.82
1943	7.37	1.00	7.37
1944	7.78	1.00	7.78
1945	6.98	1.00	6.98
1946	8.26	1.00	8.26
1947	7.47	1.00	7.47
1948	7.75	1.04	7.40
1949	5.70	1.00	5.70
1950	7.37	1.00	7.37
1951	7.71	1.00	7.71
1952	7.23	1.00	7.23
1953	7.18	1.00	7.18
1954	7.07	1.00	7.07
1955	7.07		7.56
1956			7.97
1957			7.46

FO-8, SOURCES

Col. A, National Lumber Manufacturers Association, *Lumber Industry Facts 1957*, Table 19, lumber production of hardwoods.

Col. B, Ratio, Col. A/Col. C.

Col. C, Preferred series

1869-1938. *Hist. Stat. 1949*, series F-111 (source, Bureau of the Census and Forest Service).

1939-54. *Ag. Stat. 1956*, Table 751, production, hardwoods.

1955-57. *Stat. Abstract 1959*, p. 699.

FO-8, NOTES

See notes to Table FO-2.

FO-9. OAK: Output

	Forest Service and Stat. Ab. (billion bd. ft.)
	A
1869	2.01
1879	2.94
1889	3.80
1899	4.55
1904	2.90
1905	1.83
1906	2.82
1907	3.72
1908	2.77
1909	4.41
1910	3.52
1911	3.10
1912	3.32
1913	3.21
1914	3.28
1915	2.07
1916	2.16
1917	1.97
1918	1.66
1919	2.71
1920	1.85
1921	1.59
1922	1.61
1923	2.03
1924	2.08
1925	2.13
1926	2.19
1927	2.01
1928	1.83
1929	2.57
1930	1.66
1931	.954
1932	.516
1933	.698
1934	1.08
1935	1.19
1936	1.53
1937	1.58
1938	1.20
1939	1.43
1940	1.47
1941	2.21
1942	2.76
1943	3.04
1944	3.29
1945	2.86
1946	3.38
1947	3.19
1948	n.a.
1949	2.52
1950	3.35
1951	3.59
1952	3.35
1953	3.34
1954	3.45
1955	3.72
1956	3.93
1957	3.64

FO-9, SOURCES

COL. A

1869-1945. Steer, Table 62, oak, quantity produced.

1946-57. *Stat. Abstract 1949*, Table 824; *1951*, Table 779; *1957*, Table 897; and *1959* p. 699.

FO-9, NOTES

The notes to Table FO-4 also apply to this series.

The 1899 figure given in the 1957 *Stat. Abstract* (from Census) is 2.4% lower than given here.

	Forest Service, pulpwood production (million cu. ft.)	Col. C / Col. A × 10	Preferred series, Forest Service, pulpwood production (million cords)
	A	B	C
1869			.002
1879			.041
1889			.58
1899			1.62
1900	135		(1.80)
1901	150		(2.00)
1902	160		(2.10)
1903	175		(2.30)
1904	190	.131	2.48
1905	195	.131	2.55
1906	225	.130	2.92
1907	235	.129	3.04
1908	205	.129	2.65
1909	230	.140	3.21
1910	220	.143	3.15
1911	240	.141	3.39
1912	250		(3.50)
1913	260		(3.60)
1914	265	.137	3.64
1915	300		(4.04)
1916	325	.137	4.44
1917	345	.137	4.71
1918	335	.135	4.51
1919	330	.135	4.45
1920	375	.134	5.02
1921	285	.131	3.74
1922	340	.132	4.50
1923	350	.133	4.64
1924	355	.133	4.72
1925	375	.133	5.00
1926	415	.132	5.49
1927	405	.137	5.53
1928	415	.140	5.80
1929	455	.141	6.41
1930	430	.142	6.10
1931	420	.142	5.98
1932	345	.142	4.89
1933	425	.140	5.96
1934	445	.134	5.98
1935	485	.136	6.59
1936	555	.136	7.53
1937	645	.138	8.90
1938	595	.134	7.95
1939	730	.133	9.74
1940	935	.132	12.4
1941	1075	.132	14.2
1942	1135	.131	14.9
1943	1030	.132	13.6
1944	1165	.131	15.3
1945	1140	.134	15.3
1946	1260	.135	17.0
1947	1375	.135	18.5
1948	1475	.136	20.0
1949	1275	.138	17.6
1950	1500	.138	20.7
1951	1830	.137	25.1
1952	1810	.139	25.1
1953	1895	.139	26.3
1954	1930	.140	27.0
1955	2175	.142	30.9
1956	2440	.144	35.2
1957	2320	.148	34.4

FO-10, SOURCES

COL. A, *Demand and Price Situation for Forest Products,* Nov. 1959, p. 22, industrial roundwood: pulpwood, domestic production.

COL. B, Ratio, Col. C/Col. A, times 10.

COL. C, Preferred series

1869-1955. *Hist. Forestry Stat.,* p. 18, pulpwood, domestic production.

1956-57. *Demand and Price Situation,* Nov. 1960, p. 31.

FO-10, NOTES

( ) Interpolations and extrapolations based on Col. A.

We do not know the reason for the variation in Col. B. Either "cubic feet" and "cords" were estimated to have a variable ratio (which is quite possible: see *Timber Resources,* p. 642), or the Forest Service changed its estimates between October 1958 and November 1959.

These totals appear to include residues from sawmills and veneer mills used to make pulp. Quantities of these residues used increased rapidly after 1945, and by 1957 were nearly 15% of total wood used for pulp. (See *Demand and Price Situation,* Nov. 1959, p. 9 and chart 12; also p. 28.)

FO-11. VENEER LOGS: Output

	Forest Service, Veneer logs, domestic production (mil. cu. ft., roundwood equiv.)
	A
1900	5
1901	5
1902	10
1903	15
1904	20
1905	35
1906	60
1907	65
1908	70
1909	80
1910	90
1911	80
1912	80
1913	80
1914	85
1915	85
1916	90
1917	90
1918	95
1919	105
1920	80
1921	75
1922	90
1923	115
1924	115
1925	135
1926	145
1927	175
1928	175
1929	200
1930	155
1931	125
1932	120
1933	125
1934	130
1935	145
1936	165
1937	195
1938	195
1939	210
1940	235
1941	265
1942	305
1943	280
1944	270
1945	250
1946	255
1947	275
1948	290
1949	320
1950	345
1951	395
1952	420
1953	475
1954	490
1955	575
1956	580
1957	555

FO-12. MINOR TIMBER PRODUCTS: Output

	Forest Service, new supply (bil. cu. ft.)
	A
1900	1.46
1901	1.49
1902	1.52
1903	1.57
1904	1.60
1905	1.64
1906	1.80
1907	2.11
1908	1.93
1909	2.05
1910	2.07
1911	2.02
1912	2.01
1913	1.99
1914	1.92
1915	1.88
1916	1.93
1917	1.93
1918	1.92
1919	1.91
1920	1.89
1921	1.72
1922	1.69
1923	1.70
1924	1.65
1925	1.49
1926	1.49
1927	1.43
1928	1.38
1929	1.38
1930	1.19
1931	.97
1932	.83
1933	.83
1934	.85
1935	.89
1936	.97
1937	1.02
1938	.92
1939	.96
1940	.96
1941	1.03
1942	1.00
1943	.92
1944	.90
1945	.84
1946	.89
1947	.94
1948	.85
1949	.74
1950	.77
1951	.73
1952	.70
1953	.75
1954	.74
1955	.78
1956	.73
1957	.68

FO-11 (Veneer Logs), SOURCES

COL. A, *Demand and Price Situation for Forest Products,* Nov. 1959, p. 22, industrial roundwood: veneer logs, domestic production.

FO-11, NOTES

The rounding of the figures indicates that the estimates are fairly rough.

FO-12 (Minor Timber Products), SOURCES

COL. A, *Hist. Forestry Stat.,* p. 19, other products, new supply; and *Demand and Price Situation for Forest Products,* Nov. 1959, p. 22, other products, new supply (million cubic feet, roundwood equivalent).

FO-12, NOTES

From *Hist. Forestry Stat,* p. 34:

" 'Other products' includes cooperage logs, poles and piling, fence posts, hewn ties, round mine timbers, box bolts, excelsior bolts, turnery bolts, shingle bolts, and a miscellaneous assortment of similar items.

"Fairly complete data are available for some items included in [this] column. For example, the Forest Service and the Bureau of the Census, acting either individually or in cooperation, published data which could be used to estimate the production of cooperage logs for the years 1905-11, 1918-19, biannually 1919-39, 1947, and 1952. Similar information covering about the same years was published by these two agencies for hewn ties and poles. For some products, particularly poles, data reported by the Forest Service in cooperation with the American Wood Preservers' Association in 'Wood Preservation Statistics' are used as an indicator of production. Production estimates for mine timbers and other miscellaneous items have been based on periodic surveys made by the Forest Service or the Bureau of the Census.

"Most of the products included in [this] column enter the foreign trade of the United States. The quantities involved, however, are small."

FO-13. FUELWOOD: Output

	Schurr & Assoc., consumption (mil. cords)	Forest Service, new supply (mil. cu. ft.)	Col. B / Col. A	Preferred series, supply (bil. cu. ft.)
	A	B	C	D
1870	138			6.2
1875	137			6.2
1880	136			6.1
1885	128			5.8
1890	120			5.4
1895	110			5.0
1900	100	4800	48	4.8
1901		4650		4.6
1902		4500		4.5
1903		4350		4.3
1904		4200		4.2
1905	95	4050	43	4.0
1906		3900		3.9
1907		3825		3.8
1908		3975		4.0
1909		3825		3.8
1910	91	3910	43	3.9
1911		4035		4.0
1912		3760		3.8
1913		3780		3.8
1914		3975		4.0
1915	87	3975	46	4.0
1916		3955		4.0
1917		4040		4.0
1918		4290		4.3
1919		4075		4.1
1920	83	4065	49	4.1
1921		4270		4.3
1922		3760		3.8
1923		3375		3.4
1924		3380		3.4
1925	79	3225	41	3.2
1926		3065		3.1
1927		3200		3.2
1928		3225		3.2
1929		3170		3.2
1930	75	3790	51	3.8
1931		4390		4.4
1932		4980		5.0
1933		5005		5.0
1934		4825		4.8
1935	72	4510	63	4.5
1936		4265		4.3
1937		4075		4.1
1938		4325		4.3
1939		4190		4.2
1940	70	3890	56	3.9
1941		3595		3.6
1942		2865		2.9
1943		2785		2.8
1944		2915		2.9
1945	65	2975	46	3.0
1946		2675		2.7
1947		2685		2.7
1948		2665		2.7
1949		2820		2.8
1950	60	2270	38	2.3
1951		2230		2.2
1952		2025		2.0
1953		2070		2.1
1954		2005		2.0
1955	55	1840	33	1.8
1956		1830		1.8
1957		1740		1.7

FO-13, SOURCES

Col. A, Sam H. Schurr, Bruce C. Netschert, and Associates, *Energy in the American Economy, 1850-1975* (Johns Hopkins Press and Resources for the Future, 1960), pp. 491-93, production, fuel wood.

Col. B, *Demand and Price Situation for Forest Products,* Nov. 1960, p. 24, estimated new supply, fuelwood, (includes small quantities of imported fuelwood), million cubic feet, roundwood equivalent.

Col. C, Ratio, Col. B/Col. A.

Col. D, Preferred series

1870-95. Col. A, linked to Col. B by average 1900-15 ratio in Col. C (ratio, 45).

1900-57. Col. B, transcribed.

FO-13, NOTES

Col. A. Note in source, p. 494: "Data represent estimated consumption; production data not available. Estimates for 1850-1930 for every fifth year obtained by averaging decade consumption data in R. V. Reynolds and A. H. Pierson, *Fuel Wood Used in the United States,* 1630-1930, USDA Forest Service, Circular no. 641, February 1942, Table 2. Estimates for 1935-55 based on data in *A Reappraisal of the Forest Situation* . . . Forest Resource Report No. 2, 1946; and USDA, *Timber Resources for America's Future,* Forest Resource Report No. 14, January 1958."

Col. C. It appears that the Forest Service revised its estimates downward about one-third in 1959, since these ratios average about 46 cubic feet per cord, whereas a national average is about 75 cubic feet per cord (*Timber Resources,* appendix, "Converting Factors," p. 642).

Col. D. The irregularity of the ratios in Col. C is an indication of the considerable margin of error to which these estimates are subject.

FO-14. NAVAL STORES: Output

	Turpentine (1000 barrels)	Rosin (1000 drums)	Preferred series, all naval stores, output ($ mil., 1954 prices)
	A	B	C
1900	620	1652	84.0
1901	600	1600	81.4
1902	581	1548	78.8
1903	545	1452	73.8
1904	600	1600	81.4
1905	590	1571	79.9
1906	588	1566	79.7
1907	585	1824	90.2
1908	750	2000	101.8
1909	600	1600	81.4
1910	617	1649	83.8
1911	664	1777	90.3
1912	730	1984	100.5
1913	695	1902	96.2
1914	566	1519	77.2
1915	537	1443	73.3
1916	626	1697	86.0
1917	502	1378	69.7
1918	359	997	50.3
1919	393	1088	54.9
1920	510	1358	69.1
1921	500	1365	69.1
1922	558	1542	77.9
1923	616	1695	85.7
1924	586	1610	81.4
1925	545	1516	76.5
1926	589	1680	84.4
1927	737	2093	105.2
1928	649	1867	93.6
1929	724	2070	103.9
1930	685	1972	98.9
1931	564	1613	80.9
1932	573	1659	83.1
1933	622	1838	91.7
1934	602	1783	88.9
1935	603	1821	90.5
1936	635	1866	93.2
1937	700	2031	101.7
1938	709	2077	103.8
1939	605	1814	90.3
1940	566	1717	85.3
1941	549	1708	84.5
1942	560	1656	82.6
1943	508	1463	73.4
1944	471	1318	66.4
1945	488	1452	72.4
1946	570	1720	85.5
1947	641	1991	98.5
1948	659	2076	102.5
1949	673	2028	100.9
1950	709	2172	107.7
1951	684	2084	103.4
1952	565	1751	86.7
1953	538	1780	87.2
1954	618	1920	95.0
1955	656	1947	97.1
1956	645	1994	98.7
1957	627	1865	93.0

FO-14, SOURCES

Col. A, Turpentine

1900-47. U.S. Department of Agriculture, Agricultural Marketing Service, *Naval Stores Statistics 1900-1954*, pp. 7-8, turpentine, total gum and wood (years beginning April 1).

1948-57. *Demand and Price Situation for Forest Products*, Nov. 1959, pp. 32-33.

Col. B, Rosin

1900-47. *Naval Stores Statistics*, pp. 7-8, rosin production total (years beginning April 1).

1948-57. *Demand and Price Situation*, Nov. 1959, p. 31, rosin production, total (gum, steam distilled wood, and rosin content of tall oil).

Col. C, Preferred series, output of naval stores. Col. A times $25.95 (per 50-gal. barrel) plus Col. B times $41.13 (per 520-lb. drum) (1954 prices, from Table FP-10).

FO-14, NOTES

The values given here may be a little too high, since all naval stores are valued at the prices of the gum products.

It appears that there was a major revision (downward) of the estimated rosin content of tall oil between the issuance of the *Naval Stores Statistics* and *Demand and Price Situation for Forest Products*. We have used the later series only. The former shows rosin content of tall oil beginning in 1937, rising to 15.7% of total rosin output by 1954; the latter shows output beginning in 1949, rising to 2.6% of the total by 1954 and to 14.4% by 1957.

We do not give output indexes computed with 1902 and 1929 price weights because they would move almost exactly the same as the 1954-weighted index. The reason for this is that the outputs of turpentine and rosin are always in nearly the same proportions, being fixed by nature, since both derive from the same gum. (There has, however, been a slight rise—about 10%—in the proportion of rosin to turpentine, as can be seen by inspection of Cols. A and B.)

Forestry: Consumption and Foreign Trade (FC)

FC-1. FOREST PRODUCTS: Net Imports

	Lumber	Pulpwood	Veneer logs	Naval stores	Preferred series, all forest products ($ mil.)		
	(million dollars, 1954 prices)				1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G
1869	+21.5						
1899	-45.1	4.9					
1900	-62.7						
1901	-52.2						
1902	-38.5						
1903	-68.2						
1904	-73.1	10.6					
1905	-53.9	11.6					
1906	-59.4	13.2		-62.3	-16.0	-47.5	-108
1907	-74.8	17.9		-64.9	-17.0	-52.3	-122
1908	-57.2	14.3		-70.2	-17.5	-49.7	-113
1909	-53.9	18.8		-57.2	-14.0	-39.3	-92.3
1910	-76.4	24.2		-55.6	-14.9	-44.9	-108
1911	-102	25.1		-56.2	-17.5	-56.3	-133
1912	-103	(26.8)		-64.6	-20.3	-60.4	-141
1913	-113	(28.4)		-68.1	-21.2	-65.1	-153
1914	-64.3	30.1		-43.5	-9.5	-30.0	-77.7
1915	-13.2	(30.5)		-36.1	-2.3	-2.8	-18.8
1916	-2.7	30.9		-45.8	-1.5	-1.5	-17.6
1917	+1.6	29.8		-36.5	.8	4.1	-5.1
1918	+6.6	28.8		-19.1	3.9	13.5	16.3
1919	-18.7	32.3		-32.3	-2.2	-2.6	-18.7
1920	-19.8	45.1		-30.7	1.0	6.2	-5.4
1921	-27.5	40.3		-27.0	-.6	1.2	-14.2
1922	-21.4	63.3		-35.6	4.6	15.8	6.3
1923	-27.5	74.5		-44.2	4.5	16.4	2.8
1924	-55.5	76.6		-54.5	.1	.5	-33.4
1925	-41.8	80.8	15.6	-41.2	6.0	22.3	13.4
1926	-51.1	92.7	2.1	-42.9	5.4	18.9	.8
1927	-72.6	93.5	2.4	-53.4	.7	4.7	-30.1
1928	-97.3	99.8	-22.8	-49.0	-2.5	-11.3	-69.3
1929	-91.3	106	-11.7	-53.5	-.7	-1.9	-50.5
1930	-62.1	99.3	-16.9	-48.4	1.5	6.6	-28.1
1931	-52.2	85.3	-10.2	-43.3	2.2	7.7	-20.4
1932	-42.9	78.4	-4.1	-41.4	3.4	11.4	-10.0
1933	-50.6	87.9	-4.5	-46.9	2.5	10.9	-14.1
1934	-58.3	92.0	-20.6	-39.8	3.0	6.8	-26.7
1935	-47.8	101	-17.2	-45.1	5.8	16.7	-9.1
1936	-34.1	118	-24.7	-42.8	9.7	31.4	16.4
1937	-41.2	131	-.4	-40.8	14.6	48.8	48.6
1938	-24.7	97.3	8.5	-32.0	12.3	41.9	49.1
1939	-20.9	107	12.3	-37.8	14.2	49.2	60.6
1940	-12.6	79.2	14.5	-20.4	13.2	43.9	60.7
1941	+36.8	99.1	32.8	-26.2	25.2	85.5	142
1942	59.4	100	17.9	-14.3	28.7	95.2	163
1943	30.2	90.9	10.4	-19.2	22.1	70.5	112
1944	35.2	84.3	15.0	-9.5	22.3	74.4	125
1945	34.6	106	13.5	-10.1	26.2	87.2	144
1946	32.4	129	15.4	-22.9	29.6	97.3	154
1947	-2.2	148	13.5	-26.3	29.2	92.0	133
1948	67.6	159	22.1	-23.3	40.7	136	225
1949	49.5	142	13.1	-26.7	32.9	110	178
1950	160	166	24.2	-43.5	50.0	174	307
1951	83.6	172	14.6	-25.8	44.4	147	244
1952	96.8	157	14.0	-16.2	44.2	148	252
1953	117	156	12.3	-22.9	45.8	153	262
1954	129	143	9.0	-30.0	42.5	144	251
1955	152	146	3.6	-24.9	46.1	157	277
1956	147	162		-27.4	48.1	163	282
1957	121	p 143		-24.1	41.7	139	240

FC-1, SOURCES

Computation of Index in 1954 Prices:

COL. A, Lumber. Table FC-3, Col. C, times $55/1,000 board feet.

COL. B, Pulpwood. Table FC-8, Col. B, times $14/cord.

COL. C, Veneer logs. Table FC-9, Col. E, times $110/1,000 board feet.

COL. D, Naval stores. Table FC-10, Col. E, transcribed.

COLS. E and F, Preferred series, all forest products, net imports, 1902 and 1929 prices. Computed exactly as Col. G, except that 1902 and 1929 prices were used as weights for each product in the computation. (For weights, see notes, below.)

COL. G, Preferred series, all forest products, net imports, 1954 prices. Sum of Cols. A through D.[1]

FC-1, NOTES

( ) Interpolation.

p Preliminary data.

[1] No link factor is used where the veneer log series begins (1925), as the imports were highly irregular and even negative. The implicit extrapolation by the other series would be probably erroneous. The figures were in any case probably small: See *Timber Resources*, p. 462.

The price weights used in the computation of each of the indexes are those used for domestic output computation (see Table FO-1). The 1902 and 1929 weights are:

Commodity	*1902 prices*	*1929 prices*	*Units*
A Lumber	$6.6	$25.0	1,000 board feet
B Pulpwood	3.0	9.3	cord
C Veneer logs	13.0	50.0	1,000 board feet
D Naval stores	Table FC-10, Cols. C and D, transcribed		

Minor foreign trade in poles, piling, fuelwood, rattan, tanbark, herbs, etc., is omitted from these data.

FC-2. FOREST PRODUCTS: Consumption

	Lumber	Pulpwood	Veneer logs	Minor timber products	Fuelwood	Naval stores	Preferred series, all forest products ($ mil.)		
	(million dollars, 1954 prices)						1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G	H	I
1869	731								
1870					1178		(390)	(1270)	(2300)
1875					1178				
1879	995						(420)	(1400)	(2600)
1880					1159				
1885					1102				
1889	1485						(460)	(1500)	(2900)
1890					1026				
1895					950				
1899	1886	27.6					(500)	(1700)	(3400)
1900	1952			511	912		509	1755	3476
1901	2062			522	874		515	1786	3562
1902	2183			532	855		529	1835	3677
1903	2222			550	817		528	1837	3697
1904	2293	45.4		560	798		533	1865	3763
1905	2337	47.3	19.9	574	760		531	1868	3787
1906	2469	54.2	36.2	630	741		553	1955	3981
1907	2453	60.5	38.4	739	722		562	1992	4065
1908	2255	51.4	42.1	676	760		537	1891	3833
1909	2392	63.7	48.0	718	722		554	1960	3995
1910	2370	68.2	52.5	725	741		558	1970	4008
1911	2260	72.5	48.9	707	760		547	1925	3899
1912	2370			704	722		552	1961	3960
1913	2304			697	722		546	1928	3897
1914	2161	81.2		672	760		534	1876	3773
1915	2024			658	760		516	1806	3620
1916	2183	93.2		676	760		540	1896	3812
1917	1969	95.8		676	760		514	1799	3596
1918	1760	92.0		672	817		499	1733	3431
1919	1886	94.5	63.5	669	779		506	1770	3537
1920	1903	115		662	779		511	1786	3552
1921	1567	92.7	44.0	602	817		465	1606	3164
1922	1914	126		592	722	44.9	496	1729	3450
1923	2227	139	71.1	595	646	45.0	520	1839	3723
1924	2117	143		578	646	38.7	506	1784	3597
1925	2211	151	80.8	522	608	42.5	505	1785	3616
1926	2139	169		522	589	39.6	498	1758	3552
1927	1974	171	106	501	608	46.9	482	1694	3407
1928	1925	181		483	608	45.0	477	1673	3352
1929	2035	196	122	483	608	50.2	495	1740	3494
1930	1556	185		417	722	43.0	449	1543	3022
1931	1045	169	76.6	340	836	30.8	393	1322	2498
1932	698	147		291	950	47.9	368	1204	2204
1933	896	171	77.0	291	950	42.2	397	1309	2427
1934	973	175		298	912	46.0	402	1330	2486
1935	1210	193	90.6	312	855	51.4	424	1426	2712
1936	1485	224		340	817	54.0	462	1571	3031
1937	1551	256	122	357	779	50.0	473	1610	3115
1938	1342	209		322	817	48.8	441	1489	2857
1939	1562	244	131	336	798	56.7	475	1617	3128
1940	1705	252		336	741	55.3	484	1660	3237
1941	2046	300		361	684	74.2	533	1845	3645
1942	2057	312	191	350	551	59.3	505	1766	3520
1943	1914	287	175	322	532	73.9	478	1659	3304
1944	1842	295	168	315	551	76.1	473	1638	3247
1945	1578	322	154	294	570	65.4	446	1527	2983
1946	1908	351		312	513	69.0	482	1676	3320
1947	1947	396	173	329	513	67.4	500	1733	3425
1948	2101	424		298	513	64.3	524	1815	3601
1949	1820	399		259	532	63.3	485	1666	3270
1950	2249	472		270	437	80.1	540	1881	3750
1951	2128	507	250	256	418	69.1	527	1832	3628
1952	2161	496	272	245	380	64.0	519	1817	3618
1953	2134	529	310	263	399	66.5	535	1868	3702
1954	2134	533	318	259	380	66.7	534	1859	3691
1955	2211	587	377	273	342	75.3	557	1944	3865
1956	2249	626	378	256	342	73.4	567	1979	3924
1957	2024	596	364	238	323	69.9	526	1829	3615

FC-2, SOURCES

Computation of Index in 1954 Prices:

COL. A, Lumber. Table FC-3, Col. I, times $55/1,000 board feet.

COL. B, Pulpwood. Table FC-8, Col. D, times $14/cord.

COL. C, Veneer logs. Table FC-9, Col. G, times $110/1,000 board feet.

COL. D, Minor timber products. Table FO-12, Col. A, times $350/1,000 cubic feet (Table FO-1, Col. D, transcribed).

COL. E, Fuelwood. Table FO-13, Col. D, times $190/1,000 cubic feet (Table FO-1, Col. E, transcribed).

COL. F, Naval stores. Table FC-11, Col. E, transcribed.

COLS. G and H, Preferred series, all forest products consumption, 1902 and 1929 prices. Computed exactly as Col. I, except that estimated prices of the respective materials in 1902 and 1929 were used as weights.

COL. I, Preferred series, all forest products consumption, 1954 prices. Sum of Cols. A through F, linked for missing series in earlier years.

FC-2, NOTES

The price weights used in the computation of each of the indexes are those used for the computation of the domestic output indexes (Table FO-1). The 1902 and 1929 weights are:

	Commodity	*1902 prices*	*1929 prices*	*Units*
A	Lumber	$6.6	$25.0	1,000 bd. ft.
B	Pulpwood	3.0	9.3	cord
C	Veneer logs	13.	50.	1,000 bd. ft.
D	Minor timber products	40.	160.	1,000 cu. ft.
E	Fuelwood	40.	120.	1,000 cu. ft.
F	Naval stores	Table FC-11, Cols. C and D, transcribed		

The extrapolations for years prior to 1900 depend principally on the assumption that consumption of "minor timber products" moved in proportion to that of lumber and fuelwood together.

Some minor products are omitted from consideration here, such as tanbark, rattan, roots and herbs, etc.

For accuracy of aggregate value, see Table FO-1, notes.

FC-3. LUMBER: Net Imports and Consumption

	Imports	Exports	Preferred series, net imports	Output (Table FO-2, Col. C)	Lumber Ind. Facts, per capita cons. (bd. ft.)	Total cons. (Col. E × pop.)	Col. F / Col. H	Forest Ser., new supply & apparent cons.	Preferred series, apparent cons.
	(billion bd. ft.)					(billion bd. ft.)			
	A	B	C	D	E	F	G	H	I
1869			+.5	12.8	342	13.4			13.3
1879			0	18.1	370	18.2			18.1
1889			0	27.0	434	26.8			27.0
1899	.67	1.49	-.82	35.1	456	34.1	.99	34.3	34.3
1900	.52	1.66	-1.14	36.6					35.5
1901	.59	1.54	-.95	38.4					37.5
1902	.74	1.44	-.70	40.4					39.7
1903	.65	1.89	-1.24	41.6					40.4
1904	.63	1.96	-1.33	43.0	504	41.4	.99	41.7	41.7
1905	.80	1.78	-.98	43.5	504	42.2	.99	42.5	42.5
1906	1.01	2.09	-1.08	46.0	523	44.7	1.00	44.9	44.9
1907	.91	2.27	-1.36	46.0	509	44.3	.99	44.6	44.6
1908	.77	1.81	-1.04	42.0	458	40.6	.99	41.0	41.0
1909	.99	1.97	-.98	44.5	477	43.2	.99	43.5	43.5
1910	.95	2.34	-1.39	44.5	466	43.1	1.00	43.1	43.1
1911	.84	2.70	-1.86	43.0	437	41.0	1.00	41.1	41.1
1912	1.03	2.91	-1.88	45.0	453	43.2	1.00	43.1	43.1
1913	.97	3.03	-2.06	44.0	432	42.0	1.00	41.9	41.9
1914	.92	2.09	-1.17	40.5	400	39.6	1.01	39.3	39.3
1915	1.06	1.30	-.24	37.0	378	38.0	1.03	36.8	36.8
1916	1.23	1.28	-.05	39.8	394	40.2	1.01	39.7	39.7
1917	1.20	1.17	+.03	35.8	351	36.3	1.01	35.9	35.8
1918	1.21	1.09	+.12	31.9	309	32.3	1.01	32.0	32.0
1919	1.15	1.49	-.34	34.6	324	34.0	.99	34.2	34.3
1920	1.35	1.71	-.36	35.0	324	34.5	1.00	34.6	34.6
1921	.84	1.34	-.50	29.0	262	28.4	1.00	28.5	28.5
1922	1.56	1.95	-.39	35.2	320	35.2	1.01	34.9	34.8
1923	1.97	2.47	-.50	41.0	362	40.5	1.00	40.5	40.5
1924	1.74	2.75	-1.01	39.5	328	37.4	.97	38.5	38.5
1925	1.85	2.61	-.76	41.0	343	39.7	.99	40.2	40.2
1926	1.90	2.83	-.93	39.8	327	38.4	.99	38.8	38.9
1927	1.74	3.06	-1.32	37.2	300	35.7	.99	35.9	35.9
1928	1.47	3.24	-1.77	36.8	295	35.5	1.01	35.0	35.0
1929	1.54	3.20	-1.66	38.7	268	32.6	.88	37.1	37.0
1930	1.22	2.35	-1.13	29.4	196	24.1	.85	28.2	28.3
1931	.75	1.70	-.95	20.0	140	17.4	.92	19.0	19.0
1932	.38	1.16	-.78	13.5	96	12.0	.94	12.7	12.7
1933	.36	1.28	-.92	17.2	111	13.9	.86	16.2	16.3
1934	.29	1.35	-1.06	18.8	112	14.2	.80	17.8	17.7
1935	.44	1.31	-.87	22.9	141	17.9	.77	23.3	22.0
1936	.66	1.28	-.62	27.6	174	22.3	.87	25.7	27.0
1937	.69	1.44	-.75	29.0	183	23.6	.91	25.9	28.2
1938	.53	.98	-.45	24.8	166	21.6	.92	23.6	24.4
1939	.72	1.10	-.38	28.8	193	25.3	.89	28.4	28.4
1940	.74	.97	-.23	31.2	224	29.6	.86	34.3	31.0
1941	1.36	.69	+.67	36.5	256	34.1	.94	36.2	37.2
1942	1.54	.46	1.08	36.3	312	42.0	.96	43.8	37.4
1943	.86	.31	.55	34.3	270	36.9	.95	38.8	34.8
1944	1.00	.36	.64	32.9	246	34.0	.98	34.6	33.5
1945	1.06	.43	.63	28.1	222	31.0	1.01	30.6	28.7
1946	1.24	.65	.59	34.1	232	32.8	.98	33.5	34.7
1947	1.31	1.35	-.04	35.4	231	33.3	.99	33.8	35.4
1948	1.88	.65	1.23	37.0	245	35.9	.99	36.4	38.2
1949	1.57	.67	.90	32.2	225	33.6	.98	34.4	33.1
1950	3.43	.52	2.91	38.0	274	41.6	1.02	40.7	40.9
1951	2.52	1.00	1.52	37.2	243	37.5	.99	37.9	38.7
1952	2.49	.73	1.76	37.5	251	39.4	.99	39.6	39.3
1953	2.77	.64	2.13	36.7	238	38.0	1.00	38.1	38.8
1954	3.07	.72	2.35	36.4	237	38.5	.98	39.2	38.8
1955	3.60	.84	2.76	37.4	253	41.8	1.04	40.3	40.2
1956	3.44	.76	2.68	38.2				39.9	40.9
1957	3.0	.8	2.2	34.6				37.3	36.8

FC-3, SOURCES

COL. A, Imports
1899-1956. *Hist. Forestry Stat.*, p. 14.
1957. *Demand and Price Situation for Forest Products*, Nov. 1959, p. 24.
COL. B, Exports. *Ibid.*
COL. C, Preferred series, net imports. Col. A minus Col. B.
COL. D, Output. Table FO-2, Col. C.
COL. E, National Lumber Manufacturers Association, *Lumber Industry Facts 1957*, Table 43, per capita consumption of lumber. (The original sources are: 1869-1928, U.S. Forest Service, *Lumber Distribution and Consumption, 1938;* 1929-56, NLMA estimates.)
COL. F, Col. E times U. S. population (Table N-2).
COL. G, Ratio, Col. F/Col. H.
COL. H
1899-1934. *Hist. Forestry Stat.*, p. 14, new supply.
1935-57. *Demand and Price Situation*, Nov. 1959, p. 24, apparent consumption with allowance for changes in stocks.
COL. I, Preferred series, apparent consumption. Col. C plus D.

FC-3, NOTES

The preferred series for apparent consumption is based on Forest Service (Steer) estimates of domestic output, which have been adjusted for underreporting. Since the NLMA output series (basis for Col. E) has not been so adjusted, we feel that Cols. H and I represent a more accurate picture of consumption than Col. F. The Forest Service estimates (Col. H) tally closely but not exactly with those of Col. I. The only significant differences are those after 1934, when the Forest Service began to take inventory changes into account.

COL. C. The 1869, 1879, and 1889 figures are rough estimates made from the extensive but unclear data on exports and imports in the *Statistical Abstracts*. It seems surprising that the United States had net imports of lumber in 1869, but this appears from the data; and this figure of .5 billion board feet agrees closely with the estimate of the National Lumber Manufacturers Association on consumption (Col. E)—this is given as greater than output in 1869 and approximately equal to output in 1879 and 1889. See also *Ag. Yearbook 1923*, p. 1118.

Our net imports do not take into account the foreign trade in logs and bolts, which was fairly small. In 1954, for example, these imports were about .22 billion board feet, valued at $27.5 million, while exports were about .18 billion board feet, valued at $12.2 million (U.S. Bureau of the Census, *Quarterly Summary of Foreign Commerce;* converting factor for poles, piling, etc. from *Timber Resources*, p. 642).

COL. I. Our preferred series is the same as that of the Forest Service for 1899-1934; for 1935-57, the Forest Service includes inventory adjustments.

FC-4. SOFTWOODS: Net Imports and Consumption

	Imports	Exports	Preferred series, net imports	Lumber Ind. Facts, per capita consumption	Total cons. (Col. D × pop.) (bil. bd. ft.)	Col. G / Col. E	Preferred series, apparent cons. (bil. bd. ft.)
	(billion bd. ft.)						
	A	B	C	D	E	F	G
1869				248	9.7		9.7
1879				273	13.4		13.4
1889				322	19.9		19.9
1899				340	25.4		25.4
1904				381	31.3		31.3
1905				382	32.0		32.0
1906				397	33.9		33.9
1907				387	33.7		33.7
1908				348	30.9		30.9
1909				363	32.8		32.8
1910				356	32.9		32.9
1911		1.00		336	31.5		31.5
1912		2.24		349	33.3		33.3
1913		2.44		335	32.6		32.6
1914		1.71		311	30.8		30.8
1915		1.06		295	29.7		29.7
1916		1.09		309	31.5		31.5
1917		.97		276	28.5		28.5
1918		.90		244	25.5		25.5
1919		1.11		259	27.2		27.2
1920		1.50		256	27.3		27.3
1921		1.19		212	23.0		23.0
1922	.53	1.63	-1.10	262	28.8		27.8
1923	1.87	2.08	-.21	292	32.7	1.01	33.0
1924	1.66	2.32	-.66	265	30.2	1.02	30.8
1925	1.73	2.19	-.46	279	32.3	1.02	32.8
1926	1.78	2.42	-.64	266	31.2	1.01	31.5
1927	1.63	2.61	-.98	240	28.6	1.01	29.0
1928	1.37	2.74	-1.37	240	28.9	.986	28.5
1929	1.42	2.70	-1.28	215	26.2	1.13	29.5
1930	1.15	1.91	-.76	159	19.6	1.14	22.4
1931	.70	1.35	-.65	113	14.0	1.09	15.2
1932	.35	.91	-.56	78	9.7	1.05	10.2
1933	.31	.99	-.68	91	11.4	1.15	13.1
1934	.24	1.06	-.82	93	11.8	1.17	13.8
1935	.38	1.00	-.62	118	15.0	1.17	17.6
1936	.57	.95	-.38	147	18.8	1.15	21.6
1937	.57	1.06	-.49	155	20.0	1.13	22.6
1938	.46	.71	-.25	142	18.4	1.08	19.8
1939	.60	.83	-.23	164	21.5	1.07	23.1
1940	.61	.75	-.14	192	25.3	1.01	25.5
1941	1.18	.51	.67	213	28.4	1.08	30.6
1942	1.40	.28	1.12	254	34.2	.895	30.6
1943	.70	.20	.50	211	28.8	.985	27.4
1944	.82	.23	.59	189	26.1	.988	25.8
1945	.88	.29	.59	169	23.6	.919	21.7
1946	1.02	.52	.50	178	25.2	1.05	26.4
1947	1.09	.97	.12	183	26.4	1.06	28.1
1948	1.65	.46	1.19	194	28.4	1.08	30.8
1949	1.43	.53	.90	188	28.0	.979	27.4
1950	3.14	.41	2.73	226	34.3	.971	33.3
1951	2.26	.88	1.38	198	30.6	1.01	30.9
1952	2.27	.57	1.70	205	32.2	.991	32.0
1953	2.53	.51	2.02	193	30.8	1.03	31.5
1954	2.85	.58	2.27	197	32.0	.988	31.6
1955	3.33	.65	2.68	p 206			32.5
1956	3.16	.54	2.62				32.8

FC-4, SOURCES

Col. A, Imports. *Hist. Forestry Stat.*, p. 14, imports, softwoods.
Col. B, Exports. *Ibid.*, softwoods, exports.
Col. C, Preferred series, net imports. Col. A minus Col. B.
Col. D, National Lumber Manufacturers Association, *Lumber Industry Facts 1957*, Table 43, per capita consumption of softwoods.
Col. E, Col. D times U.S. population (Table N-2).
Col. F, Ratio, Col. G/Col. E.
Col. G, Preferred series, apparent consumption
1869-1921. Col. E, transcribed.
1922-56. Col. C plus Table FO-3, Col. C.

FC-4, NOTES

p Preliminary data.

See Notes to Table FC-3. As of March 1961, 1957 data had not been published.

FC-5. YELLOW PINE: Exports

	Bus. Stat., southern pine (billion bd. ft.)
	A
1913	1.40
1914	.917
1915	.624
1916	.650
1917	.449
1918	.336
1919	.592
1920	.772
1921	.519
1922	.626
1923	.823
1924	.845
1925	.856
1926	.705
1927	.893
1928	.874
1929	.811
1930	.645
1931	.400
1932	.331
1933	.342
1934	.384
1935	.377
1936	.345
1937	.358
1938	.303
1939	.277
1940	.214
1941	.156
1942	.096
1943	.069
1944	.087
1945	.077
1946	.146
1947	.193
1948	.104
1949	.110
1950	.106
1951	.143
1952	.100
1953	.074
1954	.081
1955	.088
1956	.085
1957	.092

FC-6. DOUGLAS FIR: Exports

	Bus. Stat. (billion ft. bd. measure)
	A
1924	1.086
1925	.940
1926	1.250
1927	1.231
1928	1.324
1929	1.450
1930	.969
1931	.784
1932	.496
1933	.574
1934	.591
1935	.521
1936	.491
1937	.559
1938	.307
1939	.417
1940	.378
1941	.231
1942	.118
1943	.072
1944	.100
1945	.161
1946	.320
1947	.730
1948	.324
1949	.329
1950	.214
1951	.493
1952	.339
1953	.279
1954	.326
1955	.371
1956	.324
1957	.350

FC-5 (Yellow Pine), SOURCES

COL. A

1913-28. *Bus. Stat. 1938,* p. 128, southern pine, exports, lumber, plus timber.

1929-57. *Bus. Stat. 1959,* p. 155, southern pine, exports, total sawmill products.

(Both series adjusted from monthly averages to annual data.)

FC-5, NOTES

For the period of overlap, 1929-37, the two series are identical.

"Source: United States Department of Commerce, Bureau of the Census. . . . Export data comprise rough-sawed and dressed lumber and timber (both untreated and treated with preservative) as well as flooring and other worked or patterned wood products. In conformance with revisions in the export schedule, data for flooring, etc., are included beginning with 1949 only, and those for treated boards, planks, etc., beginning with 1952. Hewn or unsawed wood and wood manufactures such as lath or shingles, are not included. . . . The following species of pine are covered: Southern Yellow, Georgia, loblolly, long leaf, pitch, short leaf, and slash." (*Bus. Stat. 1959,* notes.)

FC-6 (Douglas Fir), SOURCES

COL. A

1924-28. *Bus. Stat. 1938,* p. 127, Douglas fir, exports, lumber and timber.

1929-56. *Bus. Stat. 1957,* p. 154, Douglas fir, exports, total sawmill products.

FC-6, NOTES

For the years of overlap, 1929-37, the two series above are identical. "Source: U.S. Department of Commerce, Bureau of the Census. . . . Exports of Douglas Fir (including Oregon pine) sawmill products include rough-sawed, dressed and, in recent years, treated lumber. In conformance with revisions in the export schedule, data beginning 1949 also include flooring and other worked or patterned wood products as well as sawed timber treated with preservative and beginning 1952, exports of treated boards, planks, etc. This series does not cover logs or unsawed and hewn timber, nor laths, shingles, and other manufactured wood products." (*Bus. Stat. 1957,* p. 293.)

FC-7. HARDWOODS: Net Imports and Consumption

	Imports	Exports	Preferred series, net imports	Nat. Lbr. Mfrs. Assn., per capita consumption (bd. ft.)	Total consumption (Col. D × pop.) (bil. bd. ft.)	Col. G / Col. E	Preferred series, apparent consumption (bil. bd. ft.)
	(billion bd. ft.)						
	A	B	C	D	E	F	G
1869				94	3.7		3.7
1879				97	4.8		4.8
1889				112	6.9		6.9
1899				116	8.7		8.7
1904				123	10.1		10.1
1905				122	10.2		10.2
1906				126	10.8		10.8
1907				122	10.6		10.6
1908				110	9.8		9.8
1909				114	10.3		10.3
1910				110	10.2		10.2
1911		.154	-.154	101	9.5	1.03	9.8
1912		.355	-.355	104	9.9	1.00	9.9
1913		.384	-.384	97	9.4	1.02	9.6
1914		.237	-.237	89	8.8	1.00	8.8
1915		.159	-.159	83	8.3	.89	7.4
1916		.094	-.094	85	8.7	.97	8.4
1917		.137	-.137	75	7.8	.83	6.5
1918	.003	.190	-.187	65	6.8	.88	6.0
1919	.005	.374	-.369	65	6.8	1.00	6.8
1920	.012	.216	-.204	68	7.2	1.00	7.2
1921	.009	.146	-.137	50	5.4	1.00	5.4
1922	.024	.250	-.226	58	6.4	.95	6.1
1923	.103	.316	-.213	70	7.8	.971	7.57
1924	.086	.346	-.260	63	7.2	1.07	7.69
1925	.111	.373	-.262	64	7.4	1.01	7.46
1926	.123	.361	-.238	61	7.2	1.03	7.43
1927	.111	.418	-.307	60	7.1	.980	6.96
1928	.096	.484	-.388	55	6.6	.986	6.51
1929	.124	.480	-.356	53	6.5	1.16	7.55
1930	.040	.417	-.377	37	4.6	1.26	5.75
1931	.025	.334	-.309	27	3.3	1.16	3.80
1932	.015	.241	-.226	18	2.2	1.14	2.49
1933	.027	.294	-.267	20	2.5	1.24	3.09
1934	.022	.284	-.262	19	2.4	1.65	3.95
1935	.058	.307	-.249	23	2.9	1.55	4.50
1936	.092	.335	-.243	27	3.5	1.53	5.36
1937	.114	.384	-.270	28	3.6	1.55	5.59
1938	.070	.266	-.196	24	3.1	1.51	4.67
1939	.102	.254	-.152	29	3.8	1.40	5.31
1940	.117	.168	-.051	32	4.2	1.31	5.49
1941	.167	.146	.021	43	5.7	1.17	6.69
1942	.114	.096	.018	58	7.8	.877	6.84
1943	.135	.077	.058	59	8.1	.917	7.43
1944	.159	.096	.063	57	7.9	.992	7.84
1945	.164	.117	.047	53	7.4	.950	7.03
1946	.206	.098	.108	54	7.6	1.10	8.37
1947	.214	.186	.028	48	6.9	1.09	7.50
1948	.217	.088	.130	51	7.5	1.01	7.53
1949	.137	.133	.004	37	5.5	1.04	5.70
1950	.283	.110	.173	48	7.3	1.03	7.54
1951	.248	.122	.126	45	6.9	1.14	7.84
1952	.215	.162	.053	46	7.2	1.01	7.28
1953	.233	.130	.103	45	7.2	1.01	7.28
1954	.208	.133	.075	40	6.5	1.10	7.15
1955	.266	.189	.077	[p] 47	7.8		7.64
1956	.273	.140	.133				8.10

FC-7, SOURCES

COL. A, Imports. *Hist. Forestry Stat.*, p. 14, imports, hardwoods.

COL. B, Exports. *Ibid.*, exports, hardwoods.

COL. C, Preferred series, net imports. Col. A minus Col. B.

COL. D, National Lumber Manufacturers Association, *Lumber Industry Facts 1957*, Table 43, per capita consumption of hardwoods.

COL. E, Col. D times U.S. population (Table N-2).

COL. F, Ratio, Col. G/Col. E.

COL. G, Preferred series, apparent consumption
1869-1910. Col. E, transcribed.
1911-56. Col. C plus Table FO-8, Col. C.

FC-7, NOTES

[p] Preliminary data.

See notes to Table FC-3. As of March 1961, 1957 data had not been published.

FC-8. PULPWOOD: Net Imports and Consumption

(millions of cords)

	Net imports, pulpwood only	Preferred series, net imports, pulpwood, pulp, and paper	Apparent consumption, pulpwood only	Preferred series, consumption, pulpwood, pulp, and paper
	A	B	C	D
1899	.37	.35	1.99	1.97
1900				
1901				
1902				
1903				
1904	.57	.76	3.05	3.24
1905	.64	.83	3.19	3.38
1906	.74	.94	3.66	3.87
1907	.92	1.28	3.96	4.32
1908	.69	1.02	3.35	3.67
1909	.79	1.34	4.00	4.55
1910	.95	1.73	4.09	4.87
1911	.94	1.79	4.33	5.18
1912				
1913				
1914	.83	2.15	4.47	5.80
1915				
1916	.78	2.21	5.23	6.66
1917	.77	2.13	5.48	6.84
1918	.74	2.06	5.25	6.57
1919	1.03	2.31	5.48	6.75
1920	1.10	3.22	6.11	8.24
1921	.82	2.88	4.56	6.62
1922	1.05	4.52	5.55	9.02
1923	1.24	5.32	5.87	9.96
1924	1.05	5.47	5.77	10.2
1925	1.09	5.77	6.09	10.8
1926	1.28	6.62	6.77	12.1
1927	1.22	6.68	6.75	12.2
1928	1.37	7.13	7.16	12.9
1929	1.23	7.58	7.64	14.0
1930	1.10	7.09	7.20	13.2
1931	.74	6.09	6.72	12.1
1932	.74	5.60	5.63	10.5
1933	.62	6.28	6.58	12.2
1934	.82	6.57	6.80	12.5
1935	1.04	7.22	7.63	13.8
1936	1.19	8.44	8.72	16.0
1937	1.50	9.39	10.39	18.3
1938	1.24	6.95	9.19	14.9
1939	1.08	7.65	10.8	17.4
1940	1.37	5.66	13.7	18.0
1941	2.21	7.08	16.6	21.4
1942	2.16	7.14	17.3	22.3
1943	1.68	6.49	15.6	20.5
1944	1.63	6.02	16.8	21.1
1945	1.69	7.57	16.9	23.0
1946	1.94	9.25	17.8	25.1
1947	2.00	10.60	19.7	28.3
1948	2.27	11.38	21.2	30.3
1949	1.64	10.16	19.9	28.5
1950	1.81	11.84	23.6	33.7
1951	2.64	12.27	26.5	36.2
1952	2.29	11.24	26.5	35.4
1953	1.54	11.17	28.1	37.8
1954	1.58	10.20	29.4	38.1
1955	1.87	10.46	33.4	41.9
1956	1.88	11.6	35.7	44.7
1957	1.76	p10.2	35.7	42.6

FC-8, SOURCES

COL. A, Net imports, pulpwood only

1899-1909. *Hist. Forestry Stat.*, p. 18, pulpwood, net imports.

1910-57. *Demand and Price Situation for Forest Products (Nov. 1959)*, p. 28.

COL. B, Preferred series, imports

1899-1955. James C. Rettie and Dwight Hair, "Future Demand for Timber," in *Timber Resources*, Table 247, p. 425, pulpwood logs and bolts, net imports plus pulpwood equivalents, net wood pulp import, paper, and board imports.

1956-57. Extrapolated by *Demand and Price Situation*, Nov. 1959, p. 22, pulpwood, net imports (including pulpwood equivalents), in cubic feet, roundwood equivalent.

COL. C, Apparent consumption, pulpwood only. *Ibid.*, apparent consumption of pulpwood, logs and bolts, total.

COL. D, Preferred series, consumption of pulpwood and equivalents.

1899-1955. Rettie and Hair, *op. cit.*, Table 247, p. 425, total apparent consumption of pulpwood.

1956-57. Extrapolated by *Demand and Price Situation, loc. cit.*, pulpwood, new supply (including pulpwood equivalents of pulp, paper, and paperboard imports in millions of cubic feet).

FC-8, NOTES

[p] Preliminary data.

COLS. B and D. The footnote to Rettie and Hair, *op. cit.*, Table 247, states:

"Source, 1939 and 1941-55, U.S. Department of Commerce, Bureau of the Census. 1899-1938 and 1940, U.S. Department of Agriculture, Forest Service and American Paper and Pulp Association, *Statistics of Paper*, reporting statistics of the Bureau of the Census.

"Converting factors used [in obtaining pulpwood equivalents of net imports] were as follows:

Sulfite pulp — 1 ton = 2.05 cords
Sulfate pulp — 1 ton = 1.78 cords
Soda pulp — 1 ton = 2.10 cords
Groundwood pulp — 1 ton = 1.01 cords
Other pulp — 1 ton = 1.02 cords
Newsprint — 1 ton = 1.27 cords
Other paper — 1 ton = 1.50 cords
Paperboard — 1 ton = .69 cords."

The consumption series takes into account changes in stocks for the years 1941-53.

FC-9. VENEER LOGS (PLYWOOD): Net Imports and Consumption

	Plywood net imports		Veneer net imports		Net imports of veneer logs & bolts (mil. bd. ft.)	Net imports, plywood & logs (mil. bd. ft.)	Pref. ser., logs & bolts used by mills (bil. bd. ft., log scale)
	(mil. sq. ft.)	(mil. bd. ft., log scale)	(mil. sq. ft.)	(mil. bd. ft., log scale)			
	A	B	C	D	E	F	G
1905							.181
1906							.329
1907							.349
1908							.383
1909							.436
1910							.477
1911							.455
1912					22	22	n.a.
1913					18	18	n.a.
1919							.577
1920							n.a.
1921							.400
1922							n.a.
1923							.646
1924							n.a.
1925					142	142	.735
1926					19	19	n.a.
1927					22	22	.962
1928					-207	-207	n.a.
1929					-106	-106	1.11
1930					-154	-154	n.a.
1931					-93	-93	.696
1932					-37	-37	n.a.
1933					-41	-41	.700
1934					-187	-187	n.a.
1935	-40.8	-19.8	-45.7	-4.2	-156	-180	.824
1936	-58.8	-28.5	-47.7	-4.3	-225	-258	n.a.
1937	-42.6	-20.7	-74.6	-6.8	-4	-31.5	1.11
1938			-44.4	-4.0	77	73.0	n.a.
1939			-55.2	-5.0	112	107	1.19
1940	-42.6	-20.7	-109.6	-10.0	132	101	n.a.
1941	-21.5	-10.4	-173.5	-15.8	298	272	n.a.
1942	-27.5	-13.3	-272.1	-24.7	163	125	1.74
1943	-136.0	-66.0	-445.6	-40.5	95	-11.5	1.59
1944	-117.8	-57.1	-293.9	-26.7	136	52.2	1.53
1945	-126.3	-61.3	-91.5	-8.3	123	53.4	1.40
1946	-36.6	-17.8	-123.4	-11.2	140	111	n.a.
1947	-81.3	-39.4	-144.5	-13.1	123	70.5	1.57
1948	28.1	13.6	-11.3	-1.0	201	214	n.a.
1949	3.66	1.8	141.4	12.9	119	134	n.a.
1950	59.4	28.8	327.4	29.8	220	279	n.a.
1951	69.3	33.6	402.6	36.6	133	203	2.27
1952	72.0	34.9	397.3	36.1	127	198	2.47
1953	210.6	102.1	534.4	48.6	112	263	2.82
1954	427.1	207.1	540.9	49.2	82	338	2.89
1955	617.4	299.4	713.6	64.9	33	397	3.43
1956							3.44
1957							3.31

FC-9, SOURCES

Col. A, Rettie and Hair, "Future Demand for Timber," in *Timber Resources,* Table 270, p. 461, exports and imports of plywood by kinds, 1935-55. "Total imports" minus "Total exports" column.

Col. B, Col. A times the conversion factor calculated from Rettie and Hair, *op. cit.,* p. 447, 1952 data:

$$\frac{\text{Veneer logs, billion bd. ft., log scale}}{\text{Plywood, billion sq. ft., 3/8 in. basis}} : \frac{1.6}{3.3} = .485$$

Col. C, Rettie and Hair, *op. cit.,* Table 271, p. 462, exports and imports of veneer by kinds, 1935-55. "Total imports" minus "total exports" column.

Col. D, Col. C times the conversion factor calculated from Rettie and Hair, *op. cit.,* p. 447, 1952 data:

$$\frac{\text{Veneer logs, billion bd. ft., log scale}}{\text{Veneer, billion sq. ft.}} : \frac{1.0}{11.0} = .0909$$

Col. E, Net imports, veneer logs. Rettie and Hair, *op. cit.,* Table 272, p. 462, imports and exports of veneer logs and bolts, selected years, 1910-55, the difference of "total imports" minus "total exports." The data are designated only as "million board feet"; presumably this is log scale rather than total log volume.

Col. F, Net imports, plywood, veneer, and veneer logs. The sum of Cols. B, D, and E.

Col. G, Preferred series, consumption of veneer logs

1905, 1910-11. *Stat. Abstract 1942,* Table 800, note: veneers, wood consumed in manufacture.

1906-09, 1919-55. Rettie and Hair, *op. cit.,* Table 258, p. 443, estimated volume of logs and bolts consumed in manufacture of veneer and plywood in specified years, 1906-55, all species.

1956-57. *Demand and Price Situation for Forest Products,* Nov. 1959, p. 30.

FC-9, NOTES

Cols. A to F. The imports series was continued in a different form after 1955. See *Demand and Price Situation,* Nov. 1960, p. 24.

Col. G. *Stat. Abstract* and Rettie and Hair give identical figures for all years of overlap, with only one exception: The 1942 *Stat. Abstract* gives, for 1907, 385 million feet.

The footnote to Rettie and Hair, *op. cit.,* Table 258, gives as source: "1906-33, U.S. Department of Commerce data republished in Sowder, A.M., and Marquis, R. W., *Timber Requirements for Veneer and Plywood,* Forest Service, Washington, D. C., 1941, p. 8. 1935-47, Forest Service, *Materials Survey,* Washington, D. C., 1950, Table 48. 1951-53 and 1955, U.S. Department of Commerce, *Facts for Industry, Softwood Plywood and Veneer, Summary for 1952,* p. 6; *Summary for 1953,* p. 2; *Summary for 1955,* p. 2; *Facts for Industry, Hardwood Veneer 1952,* p. 3, *Hardwood Veneer 1953,* p. 3. Department of Commerce 1952 data adjusted to include log consumption of 'green veneer' mills." The 1954 figure was estimated by Rettie and Hair.

FC-10. NAVAL STORES: Net Imports

	Turpentine (1000 barrels)	Rosin (1000 drums)	Preferred series, naval stores, net imports ($ million)		
			1902 prices	1929 prices	1954 prices
	A	B	C	D	E
1906	-320	-1313	-11.7	-29.2	-62.3
1907	-317	-1379	-11.9	-30.2	-64.9
1908	-391	-1461	-13.7	-33.2	-70.2
1909	-350	-1169	-11.6	-27.3	-57.2
1910	-312	-1155	-10.9	-26.3	-55.6
1911	-296	-1179	-10.6	-26.4	-56.2
1912	-416	-1309	-13.6	-31.1	-64.6
1913	-400	-1403	-13.7	-32.4	-68.1
1914	-222	-942	-8.2	-20.8	-43.5
1915	-212	-745	-7.3	-17.2	-36.1
1916	-191	-992	-7.8	-20.9	-45.8
1917	-130	-804	-5.8	-16.4	-36.5
1918	-74	-419	-3.1	-8.7	-19.1
1919	-213	-652	-6.9	-15.6	-32.3
1920	-189	-627	-6.3	-14.7	-30.7
1921	-185	-540	-5.9	-13.1	-27.0
1922	-168	-759	-6.4	-16.5	-35.6
1923	-222	-934	-8.2	-20.6	-44.2
1924	-246	-1170	-9.6	-25.2	-54.5
1925	-234	-853	-8.1	-19.5	-41.2
1926	-250	-886	-8.6	-20.4	-42.9
1927	-324	-1095	-10.9	-25.5	-53.4
1928	-270	-1020	-9.5	-23.1	-49.0
1929	-330	-1091	-11.0	-25.6	-53.5
1930	-319	-975	-10.3	-23.4	-48.4
1931	-250	-895	-8.6	-20.6	-43.3
1932	-216	-871	-7.8	-19.4	-41.4
1933	-290	-959	-9.7	-22.5	-46.9
1934	-196	-844	-7.3	-18.5	-39.8
1935	-212	-962	-8.1	-20.9	-45.1
1936	-254	-881	-8.6	-20.4	-42.8
1937	-261	-827	-8.6	-19.6	-40.8
1938	-194	-657	-6.5	-15.3	-32.0
1939	-222	-779	-7.6	-18.0	-37.8
1940	-114	-422	-4.0	-9.6	-20.4
1941	-99	-574	-4.3	-11.9	-26.2
1942	-32	-328	-1.9	-6.3	-14.3
1943	-28	-451	-2.3	-8.3	-19.2
1944	-50	-199	-1.8	-4.4	-9.5
1945	-77	-197	-2.3	-5.0	-10.1
1946	-89	-501	-3.8	-10.4	-22.9
1947	-78	-592	-3.9	-11.7	-26.3
1948	-103	-501	-4.1	-10.7	-23.3
1949	-141	-558	-5.1	-12.5	-26.7
1950	-192	-937	-7.6	-20.0	-43.5
1951	-91	-570	-4.1	-11.6	-25.8
1952	-63	-354	-2.7	-7.4	-16.2
1953	-65	-515	-3.3	-10.2	-22.9
1954	-101	-667	-4.7	-13.5	-30.0
1955	-84	-551	-3.9	-11.2	-24.9
1956	-102	-603	-4.4	-12.4	-27.4
1957	-65	-544	-3.4	-10.6	-24.1

FC-10, SOURCES

Col. A, Turpentine

1906-11. *Stat. Abstract 1916*, p. 462 (gallons converted to barrels of 50 gallons).

1912-21. *Stat. Abstract 1921*, p. 547 (gallons converted to barrels of 50 gallons).

1922-47. U.S. Department of Agriculture, Agricultural Marketing Service, *Naval Stores Statistics 1900-1954*, p. 10, turpentine, imports minus exports (in thousand barrels of 50 gallons; years beginning April 1).

1948-57. *Demand and Price Situation for Forest Products*, Nov. 1959, p. 32.

Col. B, Rosin

1906-11. *Stat. Abstract 1916*, p. 463 (barrels of 280 pounds converted to drums of 520 pounds).

1912-21. *Stat. Abstract 1921*, p. 547 (barrels of 280 pounds converted to drums of 520 pounds).

1922-47. *Naval Stores Statistics 1900-1954*, p. 14, rosin, imports minus exports (in thousands of drums of 520 pounds, years beginning April 1).

1948-57. *Demand and Price Situation*, Nov. 1959, p. 31.

Col. C, Preferred series, naval stores, net imports, 1902 price weights. Col. A times $20.70/bbl., plus Col. B times $3.85/drum (1902 prices from Table FP-10).

Col. D, Preferred series, naval stores, net imports, 1929 price weights. Col. A times $21.15/bbl., plus Col. B times $17.06/drum (1929 prices from Table FP-10).

Col. E, Preferred series, naval stores, net imports, 1954 price weights. Col. A times $25.95/bbl., plus Col. B times $41.13/drum (1954 prices from Table FP-10).

FC-10, NOTES

Cols. A and B. *Stat. Abstract 1916* data for the years 1906 to 1911 are for fiscal years, whereas the *Stat. Abstract 1921* data for 1912 to 1921 are for calendar years.

Col. B. For the years 1906 to 1921, the quantities are given in barrels of 280 pounds, which have been converted to drums of 520 pounds by the ratio $280/520 = .5385$.

FC-11. NAVAL STORES: Consumption

	Turpentine (1000 barrels)	Rosin (1000 drums)	Preferred series, naval stores, consumption ($ million)		
			1902 prices	1929 prices	1954 prices
	A	B	C	D	E
1922	403	836	11.6	22.8	44.9
1923	359	868	10.8	22.4	45.0
1924	346	722	9.9	19.6	38.7
1925	331	825	10.0	21.1	42.5
1926	337	752	9.9	20.0	39.6
1927	369	908	11.1	23.3	46.9
1928	385	852	11.2	22.7	45.0
1929	388	974	11.8	24.8	50.2
1930	373	810	10.8	21.7	43.0
1931	293	565	8.2	15.8	30.8
1932	361	937	11.1	23.6	47.9
1933	337	814	10.1	21.0	42.2
1934	347	899	10.6	22.7	46.0
1935	352	1029	11.3	25.0	51.4
1936	388	1067	12.1	26.4	54.0
1937	443	936	12.8	25.3	50.0
1938	420	921	12.2	24.6	48.8
1939	477	1077	14.0	28.5	56.7
1940	462	1052	13.6	27.7	55.3
1941	504	1485	16.1	36.0	74.2
1942	396	1192	12.8	28.7	59.3
1943	472	1501	15.6	35.6	73.9
1944	514	1526	16.5	36.9	76.1
1945	513	1267	15.5	32.5	65.4
1946	484	1372	15.3	33.6	69.0
1947	466	1344	14.8	32.8	67.4
1948	522	1235	15.6	32.1	64.3
1949	556	1190	16.1	32.1	63.3
1950	594	1573	18.4	39.4	80.1
1951	527	1346	16.1	34.1	69.1
1952	468	1261	14.5	31.4	64.0
1953	505	1299	15.4	32.8	66.5
1954	538	1282	16.1	33.2	66.7
1955	576	1468	17.6	37.2	75.3
1956	560	1433	17.1	36.3	73.4
1957	565	1342	16.9	34.8	69.9

FC-11, SOURCES

COL. A, Turpentine

1922-47. U. S. Department of Agriculture, Agricultural Marketing Service, *Naval Stores Statistics 1900-1954*, p. 10, turpentine, domestic disappearance, total (in thousands of barrels of 50 gallons; years beginning April 1).

1948-57. *Demand and Price Situation for Forest Products*, Nov. 1959, p. 32.

COL. B, Rosin

1922-47. *Naval Stores Statistics 1900-1954*, p. 14, rosin, domestic disappearance, total (in thousands of drums of 520 pounds; years beginning April 1).

1948-57. *Demand and Price Situation*, Nov. 1959, p. 31.

COL. C, Preferred series, naval stores, consumption, 1902 price weights. Col. A times $20.70/bbl., plus Col. B times $3.85/drum (1902 prices from Table FP-10).

COL. D, Preferred series, naval stores, consumption, 1929 price weights. Col. A times $21.15/bbl., plus Col. B times $17.06/drum (1929 prices from Table FP-10).

COL. E, Preferred series, naval stores, consumption, 1954 price weights. Col. A times $25.95/bbl., plus Col. B times $41.13/drum (1954 prices from Table FP-10).

Forestry:

Employment and Employment/Output Ratio (FL)

FL-1. LOGGING: Employment

(1000 persons)

	Census of Occupations					Census of Mfrs., logging, production workers	BLS, logging		Preferred series, lumbermen, raftsmen, and wood choppers
	Foresters, lumbermen, etc.	Lumbermen, raftsmen, & wood choppers	Lumbermen, raftsmen, & wood choppers	Lumbermen, raftsmen, & wood choppers	Mfg. logging, total employed		All employees	Production workers	
	A	B	C	D	E	F	G	H	I
1870	32								28
1880	56								48
1889	n.a.					174			n.a.
1890	122					n.a.			105
1899	n.a.					122			n.a.
1900	141					n.a.			122
1909	n.a.	n.a.				194			n.a.
1910	174	161				n.a.			150
1919	n.a.	n.a.				n.a.			n.a.
1920	217	205				n.a.			191
1929	n.a.	n.a.	n.a.			n.a.			n.a.
1930	177	162	151			n.a.			151
1939	n.a.		n.a.	n.a.	n.a.	n.a.			n.a.
1940	n.a.		164	127	141	n.a.			164
1947						n.a.	93	89	
1948						n.a.	87	83	
1949						n.a.	79	74	
1950	198		171	172	172	n.a.	92	86	171
1951						75	106	100	
1952						71	100	93	
1953						76	97	90	
1954						68	89	83	
1955						77	103	96	
1956							108	100	
1957							87	80	159

FL-1, SOURCES

COL. A

1870-1930. U.S. Bureau of the Census, *1940 Census of Population:* Alba M. Edwards, *Comparative Occupation Statistics for the United States, 1870 to 1940,* p. 104, sum of the following "gainful workers": Foresters, forest rangers, and timber cruisers; owners and managers of log and timber camps; lumbermen, raftsmen, and wood choppers.

1950. *1950 Census of Population,* Vol. II, Pt. I, Table 124, detailed occupation of employed persons, 1950: employed, lumbermen, raftsmen, and wood choppers, plus foresters and conservationists.

COL. B, 1910-30. Edwards, *op. cit.,* p. 104, lumbermen, raftsmen, and wood choppers only.

COL. C

1930-40. *Ibid.,* p. 57, lumbermen, raftsmen, and wood choppers. 1930 figure "adjusted to 1940 basis."

1950. *1950 Census of Population,* Special Report P-E no. 1C (Vol. IV, Part 1, Chapter C), "Occupation by Industry," p. 15, lumbermen, raftsmen, and wood choppers.

COL. D, 1940, 1950. *1950 Census of Population,* Vol. II, Part I, Table 125, detailed occupation of employed persons, by sex, for the U.S., 1950 and 1940: laborers (except farm and mine), lumbermen, raftsmen, and wood choppers.

COL. E, 1940, 1950. *Ibid.,* manufacturing: logging, total employed.

COL. F

1889. *1890 Census,* "Manufacturing Industries," Part III, p. 615, average number of employees, logging. Footnote: "Includes employees engaged by contractors, estimated at 42,025."

1899. *1900 Census,* "Manufactures," Part III, p. 851, logging (i.e., affiliated with lumber mills) plus timber camps (i.e., unaffiliated with mills): wage earners, average number, plus salaried employees except officers of corporations.

1909. *1910 Census,* "Manufactures," Vol. X, p. 496, average of 12 monthly figures headed "In logging camps."

1951-55. U.S. Bureau of the Census, *Annual Survey of Manufactures,* Chapter II, Table 1, logging camps and logging contractors: production workers, number (average for the year).

COL. G, All employees

1947-52. Bureau of Labor Statistics, *Employment and Earnings* Bulletins, as given in National Lumber Manufacturers Association, *Lumber Industry Facts 1957,* p. 41, logging camps and contractors, all employees.

1953-57. *Employment and Earnings* Bulletin, May 1959, p. 64.

COL. H, Production workers

1947-52. Bureau of Labor Statistics, in *Lumber Industry Facts 1957, loc. cit.*

1953-57. *Employment and Earnings* Bulletin, May 1959, p. 70.

COL. I, Preferred series, lumbermen, raftsmen, and wood choppers.

1870-1900. Col. A spliced to Col. I at 1910 (ratio, 0.8621).

1910-20. Col. B spliced to Col. I at 1930 (ratio, 0.9321).

1930-50. Col. C, transcribed.

1957. Col. H spliced to Col. I at 1950 (ratio, 1.99).

FL-1, NOTES

The basic data are obviously poor, in view of the wide inconsistencies among the available series. Moreover, the figures do not cover all extractive workers (pulpwood logging may or may not be covered; forestry and turpentine farming are omitted; casual workers, such as farmers collecting pulping cordwood, are probably not covered; etc.). Moreover, Census of Occupations (1870-1930) counted workers as they reported their occupations at a particular moment, regardless of whether they were employed or unemployed. Finally, classifying occupations by industry groups is a hazardous undertaking requiring many adjustments and allocations which depend on complex judgments (cf. Edwards, *op. cit.,* Col. A).

COL. E. These are industry figures, while those in Cols. C and D are occupation figures. Though the 1950 figures in Cols. C, D, and E are nearly identical, the 1940 figures differ. The overlap in 1950 between the occupation and the industry, i.e., the "Lumbermen, raftsmen, and wood choppers" who were in the "Logging" industry, is 127 (000), or less than 75% of the 172 (000) in the industry (Col. E) and of the coincidentally equal number in the occupations (Col. D).

We note also that the "Forestry" industry employed 44 (000) persons, who also were "producers" of "forest products." Following are the principal occupations involved in these two industries (in 000's):

	Logging	*Forestry*
Professional and technical	2	15
Managers, proprietors, etc.	7	2
Clerical, etc.	2	3
Craftsmen, foremen, etc.	10	2
Operatives, etc.	18	2
Laborers	134	18
Lumbermen, raftsmen, and wood choppers	127	0.3
Laborers (n.e.c.)	0	18
Total above occupations	173	42
Total all occupations	175	44

These figures are from *1950 Census of Population,* Special Report P-E no. 1-C, Occupation by Industry, Table 2. It will be noticed that the total for the logging industry (175,000) given here differs from that cited for Col. E, which gives 172,000.

FL-2. SAWLOGS: Employment/Output

FL-2, SOURCES

COL. A, Logging employment. Table FL-1, Col. I, transcribed.
COL. B, Output of lumber. Table FO-2, Col. C, transcribed.
COL. C, Preferred series, employment/output. Ratio, Col. A/ Col. B.

FL-2, NOTES

[a] The output figures are for 1869, 1879, and 1889.

The employment data are derived from Census occupation figures and are of poor quality, as noted in Table FL-1. We are by no means sure of the coverage, as noted there.

	Logging employment (1000)	Output of lumber (bil. bd. ft.)	Preferred series, Employment/output (men per mil. bd. ft.)
	A	B	C
1870	28	[a]12.8	2.2
1880	48	[a]18.1	2.7
1890	105	[a]27.0	3.9
1900	122	36.6	3.3
1910	150	44.5	3.4
1920	191	35.0	5.5
1930	151	29.4	5.1
1940	164	31.2	5.3
1950	171	38.0	4.5
1957	159	34.6	4.6

FL-3. SAWMILLS: Employment

FL-3, SOURCES

COL. A

1869. *1870 Census,* Vol. 3, "Statistics of the Wealth and Industry of the United States," p. 612, lumber sawed, hands employed.
1879. *1880 Census,* Vol. IX, "Forests of North America," p. 486, the lumbering industry, average number of hands employed.
1889. *1890 Census,* "Manufacturing Industries," Part III, p. 609, lumber mills and saw mills, average number of employees (p. 616, officers and clerks, 19,300).
1899. *1900 Census,* Vol. IX, "Manufactures," Part III, p. 851, lumber and saw mills; wage earners, average number.
1909. *1910 Census,* Vol. X, "Manufactures," p. 496, wage earners employed in logging camps and merchant sawmills, 1909, average of 12 monthly figures under heading "In mills."
1939, 1947. *1947 Census of Manufactures,* Vol. II, p. 255, sawmills and planing mills, general: production and related workers, number (average for the year).
1949-57. *Annual Survey of Manufactures,* Chapter II, Table 1, sawmills and planing mills, general: production workers, number (average for the year).

(1000 workers)

	Census of Mfrs., saw & planing mills, prod. workers	Census of Occupations, saw & planing mills, misc. empl.	Census (Fabricant), lumber & wood, n.e.c., wage earners	BLS, saw & planing mills, prod. workers	Preferred series, logging, saw & planing mills, prod. workers
	A	B	C	D	E
1869	150				150
1879	148		148		150
1889	286		312		310
1899	263		413		410
1900		151			
1904			405		410
1909	354		547		550
1910		369			
1914			480		480
1919	n.a.		481 469		
1920		337			470
1921			364		360
1923			496		500
1925			467		470
1927			414		410
1929	n.a.		419		420
1930		347			
1931			197		200
1933			189		190
1935			255		250
1937			324		320
1939	248		298		300
1940		484 436			
1947	[a]364		[b]429	548	430
1948				526	
1949	357		[b]422	475	420
1950	431	586	[b]509	518	510
1951	398		494	540	500
1952	390		475	500	480
1953	352		445	475	440
1954	296		383	430	380
1955	315		413	461	410
1956	316		399	449	400
1957	286		358	384	360

COL. B

1900. *1940 Census of Population:* Alba M. Edwards, *Comparative Occupation Statistics for the United States, 1870 to 1940*, p. 132, saw and planing mill employees.

1910-30. *Ibid.*, p. 107, sum of sawyers; operatives, saw and planing mills; laborers, saw and planing mills (lumber and furniture industries).

1940 (1st figure). *Ibid.*, p. 81, sawmills and planing mills, labor force (except new workers).

1940 (2nd figure) and 1950. *1950 Census of Population*, Vol. II, "Characteristics of the Population," Part I, Table 131, detailed industry of employed persons, 1950 and 1940: manufacturing, sawmills, planing mills, and mill work, male plus female.

COL. C

1879, 1889. *1905 Census*, "Manufactures," Part I, p. 12, lumber and timber products, wage earners, average number (1899 and 1905 figures given in this source are identical with Fabricant's).

1899-1939. Solomon Fabricant, *Employment in Manufacturing, 1899-1939* (National Bureau of Economic Research, New York, 1942), p. 197, average number of wage earners, lumber-mill products, n.e.c.

1947-57. *Annual Survey of Manufactures*, Table 1 of Chapter II, logging camps and contractors plus lumber and timber basic products, production workers, number (average for the year).

COL. D

1947-52. Bureau of Labor Statistics, *Employment and Earnings* Bulletins, as given in National Lumber Manufacturers Association, *Lumber Industry Facts 1957*, p. 41, production workers, sawmills and planing mills.

1953-57. *Employment and Earnings* Bulletin, May 1959, p. 70.

COL. E, Preferred series, production workers in logging, sawmills, and planing mills:

1869, 1879. Col. A, transcribed and rounded.

1889-1957. Col. C, transcribed and rounded.

FL-3, NOTES

[a] *The Annual Survey of Manufactures*, 1952, p. 37, n. 9, estimates that the 1947 figure may be understated by 5% because of failure to include mills sawing less than 200,000 board feet. We have not, however, adjusted for this, as the *1947 Census* was better than its predecessors by use of an intensive field canvass.

[b] *Annual Survey of Manufactures*, 1949 and 1950, p. 40, n. 4, gives 30 to 40 thousand as estimated number in logging for 1949 and 1950 (the canvass was poor). We have used 40,000 for 1947; 50,000 for 1949; 60,000 for 1950. The 1951 figure is 75,000; 1952 is 71,000; 1953 is 76,000.

While we offer a preferred series here, we have small confidence in it. We have followed Fabricant in including the logging industry with sawmills and planing mills, to attempt a series with a degree of consistency over time. The Occupation Census data equal 60% of the manufacturing industry (sawmills) data in 1899-1900, 100% in 1909-10, and 200% in 1939-40. BLS departs from *Census of Manufactures* as much as 25%.

With so many contradictions among existing series—even those which are published today—it is clear that errors of 20% or more are inevitable. Probably the root causes of the unusual size of the difficulties in this field are:

(1) The difficulty of separating the different functions—logging, sawing, milling, and hauling.

(2) The relatively large number of small establishments, many with no permanent address.

To these natural difficulties, there has been added a large margin of error by the carelessness of the canvassing by the Census Bureau until 1947, when a field canvass to supplement the usual mail questionnaire was instituted (*1947 Census of Manufactures*, Vol. II, p. 254).

For this reason, the employment series no doubt show too great a rise; the unit employment/output ratio will therefore show too little fall.

FL-4. LUMBER PRODUCTS: Employment/Output

	Employment in saw mills, etc. (1000)	Lumber output (bil. bd. ft.)	Preferred series, employment/output (men per mil. bd. ft.) (Col. A/Col. B)
	A	B	C
1869	150	12.8	11.7
1879	150	18.1	8.3
1889	310	27.0	11.5
1899	410	35.1	11.7
1904	410	43.0	9.5
1909	550	44.5	12.4
1914	480	40.5	11.9
1919	470	34.6	13.6
1921	360	29.0	12.4
1923	500	41.0	12.2
1925	470	41.0	11.5
1927	410	37.2	11.0
1929	420	38.7	10.9
1931	200	20.0	10.0
1933	190	17.2	11.0
1935	250	22.9	10.9
1937	320	29.0	11.0
1939	300	28.8	10.4
1947	430	35.4	12.1
1949	420	32.2	13.0
1950	510	38.0	13.4
1951	500	37.2	13.4
1952	480	37.5	12.8
1953	440	36.7	12.0
1954	380	36.4	10.4
1955	410	37.4	11.0
1956	400	38.2	10.5
1957	360	34.6	10.4

FL-4, SOURCES

COL. A, Employment. Table FL-3, Col. E.
COL. B, Output. Table FO-2, Col. C.
COL. C, Preferred series, employment/output. Ratio, Col. A/Col. B.

FL-4, NOTES

This series is liable to considerable error. See notes to Table FL-3.

Fish:

Price (FP)

Output (FO)

Consumption and Foreign Trade (FC)

Employment and Employment/Output (FL)

FP-11. FISH: Price

	BLS, canned salmon	Cod, fresh	Average value, all fish	Average value, all fish except menhaden	Col. H / Col. A	Col. H / Col. C	Col. H / Col. D	Preferred series, index ($ mil., 1954 weights)
	Indexes (1947-49 = 100)		(¢ per lb.)					
	A	B	C	D	E	F	G	H
1870		31.2						
1871		27.3						
1872		31.2						(30)
1873		23.4						
1874		31.2						
1875		39.0						
1876		27.3						
1877		27.3						
1878		23.4						
1879		23.4						
1880		23.4	2.42					(45)
1881		27.3						
1882		39.0						
1883		39.0						
1884		31.2						
1885		39.0						
1886		31.2						
1887		32.4	2.38			18.6		44.2
1888		37.6	2.27			20.6		46.7
1889			2.25			16.6		37.4
1890	12.6		2.33		3.71	20.1		39.5
1891	11.5	58.5	2.46		5.17	24.2		59.5
1892	11.4		2.47		3.81	17.6		45.5
1893	11.5	45.2	2.46		5.65	26.4		65.0
1894	10.9	36.8	2.47		4.39	19.4		47.8
1895	11.6	36.2	2.45		2.83	13.4		32.8
1896	11.9		2.43					
1897	10.3	28.3	2.40		3.90	16.7		40.2
1898	9.7	28.7	2.39		4.64	18.8		45.0
1899	11.7		2.35					
1900	13.6	39.1	2.34		3.29	19.1		44.8
1901	13.2	44.3	2.32	3.20	4.27	24.3		56.3
1902	12.4	39.1	2.36		4.08	21.4		50.6
1903	12.4		2.45					
1904	13.2		2.55					
1905	13.1	43.5	2.63		6.76	33.6		88.5
1906	12.9		2.67					
1907	12.8	44.8	2.88		6.09	27.1		78.0
1908	14.7	44.0	2.81		4.02	21.0		59.1
1909	13.1	46.0			5.83			76.4
1910	13.4	49.4			4.90			65.6
1911	16.2	51.8			4.63			75.0
1912	16.8	51.8			3.37			56.7
1913	17.1							
1914	17.1							
1915	17.6		3.14					
1916	19.6							
1917	29.7	81.4	2.84		4.55	47.5		135
1918	32.0	79.9	3.34		2.47	23.7		79.1
1919	35.6	70.3	3.43		3.13	32.5		111
1920	41.5	79.9	3.51		1.80	21.3		74.6
1921	33.8	54.5	3.66	5.12	2.72	25.1	17.9	91.9
1922	28.1	56.2	3.88	5.94				
1923	27.8	43.2	4.16	6.02	2.83	18.9	13.1	78.5
1924	29.1	57.2	4.25	4.91	3.93	26.9	23.3	114
1925	35.9	62.0	4.35	5.41	2.45	20.2	16.2	87.8
1926	38.9		4.35	5.12				
1927	33.5	56.8	4.27	4.96	2.53	19.9	17.1	84.8
1928	33.9	50.9	4.15	4.74	2.68	21.9	19.2	90.9
1929	31.7	51.3	3.83	4.38	3.12	25.8	22.6	99.0
1930	35.2	46.9	3.50	4.03	2.40	24.1	20.9	84.4
1931	33.3	38.9	3.17	3.53	2.05	21.5	19.3	68.3
1932	27.5	32.2	2.35	2.81	1.93	22.6	18.9	53.2
1933	18.7	30.9	2.23	2.55	3.10	26.0	22.7	58.0
1934	20.1		1.98	2.27	3.09	31.4	27.4	62.1
1935	21.5	30.7	2.07	2.28	3.20	33.2	30.1	68.7
1936	26.1		2.06	2.28	2.51	31.8	28.7	65.5
1937	27.6	33.6	2.46	2.77	2.65	29.8	26.4	73.2
1938	25.7	33.9	2.37	2.68	2.74	29.7	26.2	70.3
1939	28.6	37.1	2.27	2.55	2.41	30.4	27.1	69.0
1940	33.8	49.2	2.53	2.95	2.22	29.6	25.4	75.0
1941	35.8	51.3	2.74	3.15	2.27	29.7	25.8	81.4
1942	(41.7)	87.2	4.54	5.08	2.73	25.1	22.4	114
1943	41.7	124.4	5.09	5.85	3.19	26.1	22.7	133
1944	41.7	102.4	4.89	5.65	3.17	27.0	23.4	132
1945	41.7	102.2	6.22	7.34	4.10	27.5	23.3	171
1946	48.8	109.9	7.50	9.27	3.73	24.3	19.6	182
1947	81.2	97.3	7.48	9.22	2.55	27.7	22.5	207
1948	115.3	106.9	8.37	10.46	2.03	28.0	22.4	234
1949	(103.4)	95.8	6.93	8.57	2.27	33.9	27.4	235
1950	97.1	101.0	7.10	6.67	2.53	34.6	36.9	246
1951	120.7	117.4	8.03	10.27	2.19	32.9	25.7	264
1952	104.4	115.3	7.98	11.26	2.50	32.7	23.2	261
1953	100.2	105.2	7.81	11.86	2.68	34.4	22.7	269
1954	100.4	89.2	7.36	10.92	2.60	35.5	23.9	261
1955	110.9		6.90	10.31	2.39	38.4	25.7	265
1956	120.0		6.87	10.55	2.37	41.3	26.9	284
1957	120.0		7.25	10.58	2.47	40.8	28.0	296

FP-11, SOURCES

COL. A, Canned salmon

1890-1936. BLS *Wholesale Prices* Bulls. "Salmon, Alaska, canned, red, No. 1 tall, dozen cans, factory" (assumed to be equivalent to series 163, "Canned salmon, per dozen cans, red no. 1 tall, Seattle"), linked to pink salmon series by average 1937-38 ratio of pink salmon to red, and put on a 1947-49 base (factor, .117).

1937-48. BLS *Wholesale Prices* Bulls., series 162 and 162.1, "Canned salmon, per doz. cans, pink, No. 1 tall, Chicago (or, Seattle)" times .212 (factor to convert to 1947-49 = 100).

1949. Computed from data for 1947, 1948, and the index base (1947-49 average = 100).

1950-57. BLS *Wholesale Prices* Bulls., series 02-26-01, "Salmon, pink, no. 1 tall can, Seattle," transcribed.

COL. B, Cod, fresh

1870-86. Series extrapolated by data in the Adrich report, Vol. I, p. 31. Linked by average ratio of Aldrich data to Crutchfield series in 1887, 1888, 1891.

1887-1954. James A. Crutchfield, "Basic Statistics of the Commercial Fisheries of the United States, 1880-1955" (a study prepared at the University of Washington, Seattle, 1957, for Resources for the Future, Inc.), Table 5, weighted average prices to fishermen.

COL. C, Average value, all fish. *Hist. Stat. 1960,* series L-113 divided by series L-112. 1957 computed from *Stat. Abstract 1960,* pp. 707-08. (Excludes Alaska.)

COL. D, Average value, all fish except menhaden (the chief fish used for fish meal and oil). Same as Col. C, but with values and quantities of menhaden subtracted from the total. Menhaden data from Fish and Wildlife Service sheet, "The Menhaden Fishery, 1873-1960." Values are those of menhaden products, not of fish as landed; this results in a figure for average value in Col. D which is slightly too low.

COL. E, Ratio, Col. H/Col. A.

COL. F, Ratio, Col. H/Col. C.

COL. G, Ratio, Col. H/Col. D.

COL. H, Preferred series, 1954 weights. Worksheet 1 of this table, Col. M, transcribed.

FP-11, NOTES

( ) Rough estimates and extrapolations: For Col. A, 1942 figure based on price given for only two months; 1949 figure as stated in sources. For Col. H, 1880 based on Col. C, 1870-74 based on Col. B.

The ratio series in Cols. E, F, and G reflect the erratic nature of the data for fish; Worksheet 1 shows the spotty and and irregular data to a greater degree. It will be noted that data were collected only at irregular intervals, and that prices fluctuated violently in both the short and long run.

One reason for the fluctuations is changes in taste; preferences change widely over time. Another reason is the erratic nature of the supply, since particular varieties of fish become plentiful or scarce from year to year in a rather irregular and unpredictable manner.

The average value series (Col. C) suffers from the disadvantage that its average quality varies quite widely, as it includes everything from menhaden to lobster in widely varying proportions from year to year. This defect is significantly diminished by deducting the menhaden from the total quantities and values. Menhaden is the principal fish used in the production of industrial products (fish meal, fertilizer, oil) and as such bears a price of less than 2 cents per pound, compared to about 10 cents for other fish. Because menhaden were landed in greatly increasing quantities after the 1930's, the Col. D series rises considerably more than that in Col. C. As is evident from Col. G, however, the preferred index, with constant weights, rises considerably more than even this corrected average value series — indicating that the average "quality" of all fish other than menhaden declined, principally owing to the growth in quantities of ocean perch and the decline of salmon.

The original sources for nearly all the data except those in Col. A were publications of the U.S. Fish and Wildlife Service and its predecessors, especially *Fishery Statistics of the United States* for the various years.

The computation of the 1954 weighted index (Col. H) is shown on the worksheet on the next page. The prices, as given in Table FP-12, were multiplied by the quantities given below.

We did not feel that the quality of the data warranted the refinement of computing indexes with 1902 and 1929 output weights. However, we present below the weights of the 1902 and 1929 catches, which may be used as multipliers with the various price series in the computation of the 1902- and 1929-weighted price indexes. The data are in millions of pounds and are from Crutchfield, *op. cit.;* from *Hist. Stat. 1960,* pp. 325-26; and from historical tables of *Fishery Statistics of the United States:*

	1902 catch	*1929 catch*	*1954 catch*
Salmon: King [a] [b]	130	220	106
Pink [a] [b]	180	340	201
Tuna [a]	0	71	309
Halibut	11.2	55	61
Haddock	46	262	155
Flounder	.6	75	110
Cod	53	117	53
Lake trout [a]	[c] 14.7	18.7	8.9
Shrimp	12.4	113	268
Lobster	[d] 15.9	13.6	30.3
Oysters	[e] 111	90.1	81.9
Menhaden	[d] 610	442	1,741

[a] These varieties were weighted by dividing the total value of the following species by the price series used to represent the group:

Price series	*Species whose value was included in the weighting*
Salmon: King	King, red
Pink	Pink, chum, silver
Tuna	Albacore, bonito, and other tunalike fish
Lake trout	Lake trout, whitefish, yellow pike

[b] The total salmon catch was divided between these two species, with a guess at the proportion of the "better" and "cheaper" varieties, to be assigned to the king price series and to the pink price series, respectively. (For 1902 and 1929, *Hist. Stat. 1960* does not give catch by species.) The total 1902 catch was estimated by interpolating between 1899 and 1904 for the Pacific Coast fisheries, and by extrapolating the Alaska catch from 1927 to 1902 on the basis of the amount of canned salmon shipped (*Hist, Stat. 1960,* series L-146, L-150, and L-153). Total poundage in 1902 and 1929 was reduced in the same proportion (5.6%) as in 1954 (to give aggregate value of salmon when multiplied by our price series for 1954).

[c] 1899 catch.

[d] 1900 catch.

[e] 1901 catch.

FP-11, WORKSHEET 1. FISH: Price

(million dollars, 1954 output weights)

	Salmon								Shellfish				
	King	Pink	Tuna (yellow-fin)	Halibut	Haddock	Flounder	Cod	Lake trout	Shrimp	Lobster	Oysters	Inedible: menhaden	Index, average value, 1954 weights
	A	B	C	D	E	F	G	H	I	J	K	L	M
1887				3.17	2.45		1.03				6.09	4.00	44.2
1888	5.09			3.63	2.85		1.19				6.07	4.00	46.7
1889	2.92									1.11	8.50		37.4
1890	4.22							.28			6.41	3.30	39.5
1891	4.14			5.69	3.56		1.86				7.08		59.5
1892	4.01									1.34	9.16	5.91	45.5
1893				5.22	3.16		1.43	.33					65.0
1894				3.31	2.34		1.17						47.8
1895	3.19			1.80	2.17		1.15						32.8
1896													
1897				4.07	2.46	3.06	.90	.29		2.06	5.64	3.48	40.2
1898				3.48	1.95	1.42	.91			2.84	8.16	5.21	45.0
1899	5.35							.36					
1900				3.98	3.08		1.24			2.66			44.8
1901				6.05	3.69		1.41				6.73	3.48	56.3
1902				3.24	3.14	2.32	1.24				6.62	5.21	50.6
1903													
1904	3.51										9.07		
1905				5.08	4.00		1.38				13.0		88.5
1906					2.85								
1907				5.38	4.34		1.42						78.0
1908	5.51			4.71	3.66		1.40				6.89		59.1
1909				5.69	3.76		1.46						76.4
1910				5.38	3.87		1.57				6.55		65.6
1911				6.61	3.24		1.64				8.38		75.0
1912				5.69	3.52		1.64				5.43	5.21	56.7
1913													
1914													
1915	5.01												
1916													
1917				9.05	7.67		2.58						135
1918					5.70		2.53				7.06		79.1
1919				10.44	4.40	4.76	2.23				13.4		111.4
1920					4.62		2.53				7.27		74.6
1921				10.06	4.74		1.73				13.1	5.21	91.9
1922					4.20		1.78						
1923					5.44		1.37				8.38		78.5
1924					4.40		1.81				15.9		114
1925					4.72		1.97				10.3		87.8
1926			14.5								15.3		
1927			15.5	7.09	4.26		1.80				9.40		84.8
1928			17.0	6.39	5.02		1.62	1.49	10.5	8.40			90.9
1929	10.91	4.68	18.2	7.09	5.41	5.08	1.63	1.30			12.1	11.3	99.0
1930	8.90		18.5	6.05	4.99	4.72	1.49	1.10			11.3		84.4
1931	5.69	2.45	16.7	4.25	4.60	4.20	1.24	1.14	7.70	6.97	8.31	5.04	68.3
1932	3.42	2.35	12.6	2.70	3.53	3.52	1.02	.77	6.25	5.41	7.15	4.52	53.2
1933	5.27		13.7		3.58	3.69	.98			5.19			58.0
1934	5.29	2.75	15.5	4.12				1.06	6.92		6.45	6.08	62.1
1935	5.42	3.03	15.5		3.42	4.50	.97			6.52	7.48	6.95	68.7
1936	6.01	2.63	16.3	4.33				1.32	8.56				65.5
1937	6.32	3.43	18.4	4.59	3.83	4.67	1.06	1.44	9.52	6.03	7.45	6.43	73.2
1938	6.52	2.71	18.6	4.21	3.55	4.49	1.07	1.42	8.72	5.49	7.97	5.56	70.3
1939	6.32	3.60	16.5	4.27	3.90	3.94	1.18	1.71	8.77	5.14	7.21	6.43	69.0
1940	6.79	3.35	18.2	5.02	5.13	3.90	1.56	1.45	10.5	5.30	7.76	6.08	75.0
1941	7.57	4.66	19.5	5.44	5.13	4.02	1.63	1.52	10.5	5.30	9.31	6.78	81.4
1942	12.6	6.11	28.6	6.92	9.36	5.89	2.76	2.12	10.5	6.86	12.8	9.73	114
1943	15.3	5.32	30.6	9.27	12.2	8.07	3.95	2.95	10.5	7.99	16.5	10.8	133
1944	13.5	6.27	30.7	6.98	10.5	8.28	3.25	3.18	10.5	7.79	21.2	10.1	132
1945	16.1	6.41	30.8	8.15	10.8	8.80	3.24	4.02	30.0	12.3	27.2	13.6	171
1946	16.7	7.85	35.5	8.92	13.0	9.24	3.49	3.57	29.9	11.7	26.7	15.1	182
1947	19.2	13.9	48.1	10.96	10.7	9.39	3.09	2.82	30.2	11.2	28.3	19.1	207
1948	22.6	12.6	51.7	9.77	12.3	9.88	3.39	3.75	47.2	12.4	29.9	18.6	234
1949	20.0	17.6	50.2	9.58	10.6	9.59	3.04	3.64	51.8	10.5	31.2	17.6	235
1950	24.0	15.9	47.4	10.02	11.6	9.86	3.20	3.40	60.9	10.5	31.7	17.6	246
1951	25.6	24.8	47.7	8.76	12.0	12.3	3.72	3.79	62.0	10.4	32.6	20.0	264
1952	25.4	18.9	48.8	9.23	12.0	12.2	3.66	3.93	65.1	12.5	32.2	16.7	261
1953	23.3	19.0	49.4	7.44	11.7	11.3	3.34	3.81	79.0	11.4	29.9	19.1	269
1954	26.0	17.9	53.2	8.14	10.0	10.7	2.83	4.06	60.8	11.3	32.8	23.5	261
1955	28.6	20.6	47.3	6.52	9.29	10.7	2.91	3.90	67.9	11.6	32.2	23.3	265
1956	31.4	18.2	41.7	10.02	9.76	10.4	3.11	4.28	84.8	13.1	33.7	23.6	284
1957	29.5	23.4	41.0	8.07	11.8	10.9	3.21	4.44	96.3	11.3	33.6	22.8	296

FP-12. FISH: Price by Species

FP-12, SOURCES

Compiled from data published by the Fish and Wildlife Service of the United States Department of the Interior (and predecessor agencies), by James A. Crutchfield of the University of Washington, in a study prepared for Resources for the Future, Inc., "Basic Statistics of the Commercial Fisheries of the United States, 1880-1955" (Seattle, 1957). 1955-57 from U.S. Fish and Wildlife Service, *Fishery Statistics of the United States*, annual volumes, table, United States and Alaska — catch by region.

FP-12, NOTES

These are simple average value computations (total receipts divided by weight of catch, generally round weight), for the United States and Alaska. The scattered nature of the figures before 1929 makes clear the rough estimate nature of our index for all fish (Table FP-11). A further deficiency of these price data is the lack of fixed quality and location standards; between 1880 and 1957 there was a considerable shift from New England to West Coast landings in the case of halibut, and from West Coast to Alaska landings in the case of salmon.

(cents per pound)

	Salmon								Shellfish			
	King	Pink	Tuna (yellow-fin)	Halibut	Haddock	Flounder	Cod	Lake trout	Shrimp	Lobster	Oysters	Inedible: menhaden
	A	B	C	D	E	F	G	H	I	J	K	L
1887				5.19	1.58		1.92				7.44	.23
1888	4.82			5.93	1.84		2.23				7.41	.23
1889	2.77									3.65	10.37	
1890	4.00							3.17			7.82	.19
1891	3.92			9.31	2.30		3.47				8.64	
1892	3.80									4.41	11.18	.34
1893				8.54	2.04		2.68	3.73				
1894				5.41	1.51		2.18					
1895	3.02			2.95	1.40		2.15					
1896												
1897				6.66	1.59	2.78	1.68	3.23		6.79	6.88	.20
1898				5.69	1.26	1.29	1.70			9.38	9.96	.30
1899	5.07							4.09				
1900				6.50	1.99		2.32			8.76		
1901				9.90	2.38		2.63				8.22	.20
1902				5.30	2.03	2.11	2.32				8.08	.30
1903												
1904	3.33										11.07	
1905				8.30	2.58		2.58				15.87	
1906					1.84							
1907				8.80	2.80		2.66					
1908	5.22			7.70	2.36		2.61				8.41	
1909				9.30	2.43		2.73					
1910				8.80	2.50		2.93				8.00	
1911				10.80	2.09		3.07				10.23	
1912				9.30	2.27		3.07				6.63	.30
1913												
1914												
1915	4.75											
1916												
1917				14.80	4.95		4.83					
1918					3.68		4.74				8.62	
1919				17.07	2.84	4.33	4.17				16.39	
1920					2.98		4.74				8.87	
1921				16.45	3.06		3.23				15.95	.30
1922					2.71		3.33					
1923					3.51		2.56				10.23	
1924					2.84		3.39				19.43	
1925					3.05		3.68				12.52	
1926			4.70								18.67	
1927			5.03	11.60	2.75		3.37				11.47	
1928			5.50	10.44	3.24		3.02	16.70	3.91	27.70		
1929	10.34	2.33	5.88	11.60	3.49	4.62	3.04	14.60			14.79	.65
1930	8.44		5.99	9.89	3.22	4.29	2.78	12.37			13.77	
1931	5.39	1.22	5.41	6.95	2.97	3.82	2.31	12.86	2.87	22.98	10.14	.29
1932	3.24	1.17	4.08	4.41	2.28	3.20	1.91	8.63	2.33	17.85	8.73	.26
1933	5.00		4.45		2.31	3.36	1.83			17.12		
1934	5.01	1.37	5.01	6.73				11.87	2.58		7.87	.35
1935	5.14	1.51	5.01		2.21	4.09	1.82			21.49	9.13	.40
1936	5.70	1.31	5.28	7.08				14.82	3.19			
1937	5.99	1.71	5.96	7.50	2.47	4.25	1.99	16.13	3.55	19.88	9.10	.37
1938	6.18	1.35	6.01	6.89	2.29	4.08	2.01	15.99	3.25	18.11	9.73	.32
1939	5.99	1.79	5.35	6.98	2.52	3.58	2.20	19.26	3.27	16.95	8.80	.37
1940	6.44	1.67	5.90	8.21	3.31	3.55	2.92	16.31	3.90	17.49	9.47	.35
1941	7.18	2.32	6.32	8.89	3.31	3.66	3.04	17.13	3.92	17.48	11.36	.39
1942	11.94	3.04	9.25	11.32	6.04	5.36	5.17	23.83	3.90	22.63	15.65	.56
1943	14.48	2.65	9.91	15.15	7.90	7.34	7.38	33.19	3.92	26.36	20.17	.62
1944	12.84	3.12	9.93	11.41	6.78	7.53	6.07	35.76	3.91	25.68	25.85	.58
1945	15.30	3.19	9.97	13.33	6.99	8.00	6.06	45.17	11.17	40.58	33.24	.78
1946	15.87	3.91	11.48	14.58	8.41	8.40	6.52	40.08	11.15	38.52	32.58	.87
1947	18.17	6.90	15.58	17.92	6.93	8.54	5.77	31.67	11.27	36.91	34.51	1.10
1948	21.39	6.27	16.75	15.98	7.96	8.99	6.34	42.19	17.61	40.95	36.52	1.07
1949	18.96	8.77	16.26	15.67	6.85	8.72	5.68	40.95	19.31	34.46	38.10	1.01
1950	22.78	7.90	15.34	16.38	7.46	8.97	5.99	38.22	22.69	34.73	38.73	1.01
1951	24.28	12.35	15.45	14.33	7.77	11.19	6.96	42.55	23.12	34.38	39.83	1.15
1952	24.08	9.43	15.81	15.09	7.74	11.09	6.84	44.21	24.25	41.17	39.32	.96
1953	22.05	9.46	15.98	12.17	7.54	10.29	6.24	42.84	29.44	37.66	36.45	1.10
1954	24.67	8.92	17.23	13.31	6.48	9.75	5.30	45.64	22.67	37.33	40.03	1.35
1955	27.09	10.27	15.32	10.66	6.00	9.72	5.45	43.84	25.29	38.20	39.32	1.34
1956	29.76	9.06	13.50	16.38	6.30	9.45	5.81	48.10	31.62	43.20	41.11	1.36
1957	28.00	11.67	13.26	13.20	7.63	9.90	6.00	49.87	35.88	37.35	41.04	1.31

FO-15. FISH: Output

(billion lb., round weights)

	Total catch, U.S. & Alaska			Total catch, U.S. only		Preferred series, U.S. & Alaska, adjusted
	For food	For industrial products	Total	Hist. Stat.	Crutchfield	
	A	B	C	D	E	F
1880			1.71	1.60	1.71	1.71
1881					1.56	1.56
1882					1.62	1.63
1883					1.57	1.59
1884					1.52	1.55
1885					1.48	1.50
1886					1.43	1.47
1887				1.41	1.38	1.42
1888				1.53	1.53	1.57
1889			1.68	1.62	1.70	1.77
1890			1.76	1.69	1.77	1.84
1891			1.71	1.62	1.68	1.77
1892			1.65	1.59	1.66	1.72
1893				1.55	1.64	1.71
1894				1.58	1.61	1.69
1895				1.56	1.61	1.67
1896				1.56	1.61	1.69
1897				1.56	1.60	1.68
1898				1.63	1.67	1.76
1899				1.74	1.80	1.90
1900				1.83	1.89	2.03
1901				1.93	1.95	2.12
1902				1.96	1.98	2.19
1903				1.95	1.95	2.14
1904				1.93	1.94	2.11
1905			2.00	1.88	1.89	2.08
1906			2.05	1.88	1.90	2.09
1907			1.93	1.76	1.90	2.09
1908			2.05	1.83	1.90	2.12
1909					1.91	2.13
1910					1.95	2.18
1911					1.98	2.26
1912					2.02	2.39
1913					2.05	2.40
1914					2.12	2.49
1915				2.15	2.18	2.56
1916					2.18	2.60
1917			2.68	2.21	2.21	2.73
1918				2.23	2.25	2.84
1919				2.23	2.23	2.65
1920				2.21	2.20	2.62
1921	1.45	.80	2.25	2.15	2.15	2.41
1922	1.68	.94	2.62	2.05	2.04	2.49
1923	1.81	.92	2.73	2.07	1.96	2.44
1924	1.87	.59	2.46	2.06	2.06	2.59
1925	2.03	.86	2.89	2.18	2.18	2.73
1926	2.20	.67	2.87	2.10	2.12	2.84
1927	2.17	.63	2.81	2.27	2.31	2.74
1928	2.37	.69	3.06	2.33	2.37	3.03
1929	2.60	.89	3.49	2.84	2.91	3.56
1930	2.48	.75	3.22	2.61	2.66	3.28
1931	2.13	.50	2.63	2.03	2.06	2.66
1932	1.86	.75	2.61	2.01	2.01	2.62
1933	2.09	.91	3.00	2.33	2.33	2.97
1934	2.43	1.67	4.10	3.27	3.27	4.09
1935	2.58	1.55	4.13	3.56	3.56	4.21
1936	2.85	1.97	4.83	3.91	3.91	4.85
1937	2.70	1.65	4.35	3.52	3.52	4.36
1938	2.64	1.61	4.25	3.46	3.46	4.26
1939	2.71	1.73	4.44	3.79	3.78	4.45
1940	2.67	1.38	4.06	3.50	3.51	4.07
1941	3.06	1.84	4.90	4.16	3.98	4.71
1942	2.68	1.19	3.87	3.35	3.42	3.94
1943	2.74	1.42	4.16	3.61	3.51	4.10
1944	2.86	1.67	4.53	3.94	3.93	4.49
1945	3.17	1.43	4.60	3.98	3.99	4.59
1946	3.04	1.42	4.46	3.80	3.79	4.44
1947	3.01	1.33	4.34	3.73	3.84	4.45
1948	3.13	1.37	4.50	4.01	3.98	4.55
1949	3.29	1.50	4.79	4.32	4.22	4.70
1950	3.29	1.59	4.88	4.40	4.40	4.88
1951	3.03	1.38	4.41	4.01	4.00	4.41
1952	2.76	1.65	4.42	4.04	4.04	4.42
1953	2.50	1.97	4.47	4.17	4.16	4.47
1954	2.68	2.06	4.74	4.40	3.83	4.74
1955	2.56	2.23	4.79	4.48	4.17	4.79
1956	2.67	2.58	5.25	4.82		5.25
1957	2.46	2.31	4.78	4.41		4.78

FO-15, SOURCES

COL. A, E. A. Power, *Fisheries of the United States 1959: A Preliminary Review* (U.S. Fish and Wildlife Service, Fishery Leaflet 393, Washington, 1960), p. 10, catch for human food.

COL. B, *Ibid.*, catch for industrial products (including meal, oil, fish solubles, homogenized-condensed fish, shell products, and use as bait and animal food).

COL. C

1880-1920. *Hist. Stat. 1960,* series L-110, yield of U.S. and Alaska fisheries, total.

1921-57. Power, *loc. cit.*, catch of fish and shellfish, total.

COL. D

1880-1956. *Hist. Stat. 1960,* series L-112, yield of U.S. and Alaska fisheries, United States.

1957. *Stat. Abstract 1960,* pp. 707-08.

COL. E, James A. Crutchfield, "Basic Statistics of the Commercial Fisheries of the United States, 1880-1955" (a study prepared at the University of Washington, Seattle 1957, for Resources for the Future, Inc.), Table 1, total landings U.S. fisheries by regions: total, U.S. and Alaska, adjusted, less Alaska.

COL. F, Preferred series, U.S. and Alaska catch, adjusted

1880-1950. Crutchfield, *op. cit.*, total landings, U.S. and Alaska, adjusted.

1951-57. Col. C, transcribed.

FO-15, NOTES

These data are all in "round weights," i.e., weight as taken rather than after cleaning and processing. Exceptions are bivalve mollusks (oysters, clams, etc.), reported as meat weight, and whales, reported in weight of processed products. Such items as mussel shells (for mother-of-pearl buttons) and sponges are included.

The fish series are one of two exceptions we make to our usual practice of omitting Alaska. Inclusion of the Alaska catch in U.S. output seems desirable because it is customary, and because most of the catch is consumed in the United States (without being included in import data).

The data were collected by state agencies in the first instance for most years, and assembled from the state reports by the Fish and Wildlife Service and its predecessor agencies. This was done in groups of states, forming eight regions plus Alaska. These different regions were not all covered in all years, so that the data are spotty. Complete coverage for the United States as a whole is available only in the years 1880 (excepting only Mississippi River states (rivers only)); 1908; 1929-31 (excepting Mississippi River states in 1929-30); 1937-40 (except Mississippi River); 1950; and 1954-57 (*Fishery Statistics of the United States 1957,* p. 394).

As a result of these gaps, the annual series are quite dependent on interpolations and estimates covering at least several of the regions in most years. In addition, there have been a number of adjustments to correct for errors and omissions in the original data, as for example converting to estimated round weights the weights reported "as landed" or even cured; and eliminating inconsistencies in the basis of reporting shellfish.

Crutchfield's data include corrections for two "known errors" prior to 1930: reporting of cured fish on an actual weight basis, and incorrect reporting of oyster weights. In addition, he used straight line interpolation (and extrapolation) to cover most of the gaps in data for each of the regions.

Despite these major difficulties, the estimates of total catch are not widely different. Doubtless they all reflect common errors; in particular, for the earlier years, a wider degree of undercoverage and probably more erroneous reporting on an "as landed" basis. For these reasons, we believe the series shows somewhat more rise in total output than was the actual case.

COL. C. The series from the Fish and Wildlife Service is identical to that in *Historical Statistics* for 1921-56.

FC-12. FISH: Imports and Exports

	Nonedible products							Edible products					
	Imports, quantities		Imports, values ($ mil.)			Exports ($ mil.)	Net imports ($ mil.)	Value ($ mil.)			Quantities (mil. lb.)		
	Fish meal & scrap (mil. lb.)	Oils (mil. gal.)	Fish meal & scrap	Oils	All nonedible products			Imports	Exports	Net imports	Imports	Exports	Net imports
	A	B	C	D	E	F	G	H	I	J	K	L	M
1880					.226	.349	-.123	3.40	4.02	-.62	47.8	31.0	16.8
1881					.377	.230	.147	3.73	4.59	-.86	56.2	34.2	22.0
1882					.602	.972	-.370	4.05	4.80	-.75	50.0	25.5	24.5
1883					.576	.405	.171	4.93	5.18	-.25	56.8	27.5	29.3
1884					.672	.516	.156	5.58	4.74	.84	104	32.8	71.2
1885					.562	.504	.058	4.80	4.89	-.09	113	37.7	75.3
1886					.476	.511	-.035	3.61	4.21	-.60	71.9	34.1	37.8
1887					.423	.471	-.048	4.23	3.97	.26	87.1	45.8	41.3
1888					.465	.410	.055	4.86	4.18	.68	93.9	41.0	52.9
1889					.434	.197	.237	4.81	5.97	-1.16	99.6	53.6	46.0
1890					.502	.566	-.064	5.29	6.04	-.75	102	57.4	44.6
1891					1.15	.424	.726	6.28	5.00	1.28	81.0	52.8	28.2
1892					1.45	.361	1.09	5.46	4.52	.94	64.4	47.1	17.3
1893					2.03	.135	1.90	5.85	4.75	1.10	69.0	51.3	17.7
1894					1.12	.223	.897	5.44	3.49	1.95	72.1	40.5	31.6
1895					1.45	.262	1.19	5.76	4.50	1.26	66.8	48.5	18.3
1896					1.47	.330	1.14	6.37	5.45	.92	71.8	56.2	15.6
1897					1.68	.406	1.27	6.17	5.62	.55	75.9	58.5	17.4
1898					1.62	.310	1.31	6.08	4.67	1.41	74.4	45.7	28.7
1899					1.66	.369	1.29	6.06	5.17	.89	71.8	47.9	23.9
1900					1.88	.337	1.54	7.47	5.43	2.04	78.7	47.5	31.2
1901					1.97	.404	1.57	7.26	6.79	.47	78.3	58.0	20.3
1902					2.53	.460	2.07	8.53	6.56	1.97	97.7	60.3	37.4
1903					3.03	.536	2.49	8.64	6.72	1.92	101	60.6	40.4
1904					2.36	.396	1.96	9.89	7.86	2.03	108	64.5	43.5
1905					2.04	.409	1.63	10.5	6.53	3.97	104	47.6	56.4
1906					2.24	.319	1.92	11.6	7.56	4.04	122	61.0	61.0
1907					2.40	.430	1.97	12.3	5.54	6.76	116	34.5	81.5
1908					2.05	.364	1.69	12.3	5.69	6.61	120	37.1	82.9
1909					2.66	.370	2.29	12.3	6.11	6.19	125	44.5	80.5
1910					3.10	.694	2.41	13.8	9.95	3.85	178	75.2	103
1911					3.51	.391	3.12	14.9	7.70	7.20	199	55.0	144
1912					3.58	.636	2.94	14.6	8.64	5.96	188	65.4	123
1913					3.23	.851	2.38	15.3	9.71	5.59	197	90.9	106
1914					2.95	.465	2.48	18.8	12.8	6.0	253	122	131
1915					2.46	.216	2.24	18.4	12.9	5.5	261	108	153
1916					3.94	.352	3.59	17.5	20.0	-2.5	269	190	79
1917					4.63	.319	4.31	22.5	19.9	2.6	293	160	133
1918					4.93	.789	4.14	27.8	29.8	-2.0	308	161	147
1919					4.69	1.88	2.81	35.8	48.0	-12.2	358	237	121
1920					5.50	1.04	4.46	35.2	31.5	3.7	302	131	171
1921					2.49	.469	2.02	29.0	15.9	13.1	304	96	208
1922					3.48	.657	2.82	30.6	15.8	14.8	302	142	160
1923					6.71	.480	6.23	26.7	17.0	9.7	270	134	136
1924					17.1	.530	16.6	29.3	20.3	9.0	285	165	120
1925		11.4		6.7	20.0	.528	19.5	29.1	20.7	8.4	263	161	102
1926		12.4		6.7	17.6	.425	17.2	32.5	19.9	12.6	309	164	145
1927		17.8		8.6	20.8	.376	20.4	34.9	18.3	16.6	312	158	154
1928		16.7		8.5	21.5	.388	21.1	37.4	20.8	16.6	361	171	190
1929		18.6		9.4	27.8	.329	27.5	38.8	23.5	15.3	357	213	144
1930		17.0		8.0	15.8	.292	15.5	35.0	17.0	18.0	338	167	171
1931		19.1		8.1	14.1	.194	13.9	28.9	11.4	17.5	277	114	163
1932		12.6		4.6	7.9	.151	7.7	21.7	7.7	14.0	260	87	173
1933		12.8		4.8	8.7	.962	7.7	21.8	7.4	14.4	284	80	204
1934		8.0		3.8	7.6	1.82	5.8	23.2	12.0	11.2	287	116	171
1935		10.5		4.5	8.7	1.50	7.2	27.5	12.9	14.6	325	120	205
1936		12.5		5.4	11.5	.951	10.5	30.4	12.3	18.1	371	111	260
1937	186	16.4	3.4	7.2	16.7	.838	15.9	33.9	13.7	20.2	365	119	246
1938	80	11.3	1.5	5.3	11.0	.617	10.4	28.3	13.8	14.5	303	118	185
1939	123	11.6	2.6	5.1	13.6	.627	13.0	32.4	13.6	18.8	346	125	221
1940	92	5.6	2.2	3.9	12.8	.670	12.1	29.1	17.1	12.0	303	145	158
1941	65	4.7	1.7	4.9	12.9	.529	12.4	28.0	21.5	6.5	306	216	90
1942	45	5.2	1.6	3.7	10.6	4.04	6.6	29.0	27.9	1.1	277	167	110
1943	6	21.1	.21	15.5	23.5	5.29	18.2	43.7	43.2	.5	324	239	85
1944	20	10.9	.68	12.2	25.0	4.01	21.0	53.4	31.9	21.5	339	112	227
1945	6	5.0	.19	9.8	24.8	7.66	17.1	76.4	30.9	45.5	405	136	269
1946	18	4.2	.88	11.4	39.7	1.62	38.1	90.0	38.4	51.6	474	200	274
1947	17	4.7	.83	11.2	26.7	3.55	23.2	83.3	49.3	34.0	408	207	201
1948	82	10.8	5.0	23.2	45.0	3.38	41.6	112	21.0	91.0	473	95	378
1949	104	6.1	7.5	12.6	37.9	5.84	32.1	114	29.2	84.8	471	147	324
1950	128	9.7	7.2	11.5	39.9	8.62	31.3	158	18.9	139	640	122	518
1951	257	11.2	14.4	17.9	54.1	8.66	45.4	158	27.1	131	647	166	481
1952	407	11.0	24.3	13.4	57.3	6.44	50.9	183	15.5	168	705	62	643
1953	263	9.3	15.2	9.2	49.6	10.8	38.8	196	17.1	179	726	69	657
1954	292	6.7	18.1	8.5	48.7	15.3	33.4	204	16.2	188	803	63	740
1955	196	11.9	13.0	12.5	49.9	15.1	34.8	208	24.9	183	771	110	661
1956	181	9.2	11.5	9.3	48.0	16.6	31.4	233	22.9	210	788	102	686
1957	162	7.9	9.7	9.6	46.5	15.4	31.1	251	20.5	230	884	85	799

FC-12, SOURCES

COL. A, U. S. Fish and Wildlife Service, "Imports of Fish Meal and Scrap, 1937-1959" (Supplement to C.F.S. no. 2362), tons imported, multiplied by 2000.

COL. B, U.S. Fish and Wildlife Service, "Foreign Trade in Fish and Marine-Animal Oils, 1925-1959" (Supplement to C.F.S. no. 2411), table, p. 10, domestic supply of fish and marine-animal oils, imports.

COL. C, Same source as Col. A.

COL. D, Same source as Col. B.

COL. E

1880-1954. James A. Crutchfield, "Basic Statistics of the Commercial Fisheries of the United States, 1880-1955" (a study prepared at the University of Washington, Seattle, 1957, for Resources for the Future, Inc.).

1955-57. *Fishery Statistics of the United States* for the respective years, tables, imports of fishery products entered for consumption.

COL. F, *Ibid.*, tables, exports of domestic fishery products.

COL. G, Col. E minus Col. F.

COL. H, Same sources as Col. E.

COL. I, Same sources as Col. F.

COL. J, Col. H minus Col. I.

COL. K, Same sources as Col. E.

COL. L, Same sources as Col. F.

COL. M, Col. K minus Col. L.

FC-12, NOTES

Import and export weights are given net, not in round weight equivalents, as is output (Table FO-15). Imports from Alaska are not included.

COLS. A and B. These are gross imports, before subtraction of exports. As can be seen from Cols. C, D, and E, they constituted, in most years for which we have data, something like half the value of all inedible fish imports, the other half consisting largely of pearls, sponges, fish skins, and other heterogeneous matter.

While it appears that there were no exports of significance in the case of fish meal and scrap during the years for which data are shown on imports (cf. *Fishery Statistics of the United States 1958*, p. 66, and *1952*, p. 54), exports of fish oils were substantial after 1942, when they first exceeded 1 million gallons. Total oil exports in these years were as follows (in millions of gallons; source same as Col. B):

1942	1.1	1946	.6	1950	10.2	1954	18.9
1943	3.5	1947	1.5	1951	6.7	1955	19.1
1944	1.4	1948	1.6	1952	5.9	1956	18.9
1945	2.3	1949	5.2	1953	14.5	1957	15.6

COLS. E-M. The Crutchfield data for 1880-1923 were derived from foreign trade estimates presented in *Statistical Abstract* and *Foreign Commerce and Navigation of the United States* (Dept. of Commerce). For 1924-54, the data were obtained from published summaries of the Fish and Wildlife Service. Crutchfield seriously questions the reliability of the data for the earlier period (1880-1923).

FC-13. FISH: Consumption

(billion pounds)

	Output for food, round wt. (FO-15)	Net imports, edible wt. (FC-12)	Supply (Col. B + ½ Col. A)	Col. E / Col. C	Consumption (edible weight)		
					Crutchfield	Dept. of Agriculture	Preferred series
	A	B	C	D	E	F	G
1880		.017			.76		.74
1881		.022			.70		.69
1882		.024			.73		.72
1883		.029			.71		.70
1884		.071			.72		.71
1885		.075			.70		.69
1886		.038			.67		.66
1887		.041			.66		.65
1888		.053			.74		.73
1889		.046			.87		.85
1890		.045			.84		.82
1891		.028			.80		.78
1892		.017			.77		.75
1893		.018			.76		.74
1894		.032			.76		.74
1895		.018			.69		.68
1896		.016			.75		.73
1897		.017			.75		.73
1898		.029			.79		.77
1899		.024			.85		.83
1900		.031			.91		.89
1901		.020			.95		.93
1902		.037			.98		.96
1903		.040			.96		.94
1904		.043			.96		.94
1905		.056			.95		.93
1906		.061			.96		.94
1907		.081			.97		.95
1908		.083			.98		.96
1909		.080			.99		.97
1910		.103			1.03		1.01
1911		.144			1.05		1.03
1912		.123			1.09		1.07
1913		.106			1.13		1.11
1914		.131			1.28		1.25
1915		.15			1.15		1.13
1916		.08			1.14		1.12
1917		.13			1.15		1.13
1918		.15			1.16		1.14
1919		.12			1.24		1.22
1920		.17			1.28		1.25
1921	1.45	.21	.93	1.26	1.17		1.15
1922	1.68	.16	1.00	1.28	1.28		1.25
1923	1.81	.14	1.04	1.19	1.24		1.22
1924	1.87	.12	1.05	1.24	1.30		1.27
1925	2.03	.10	1.11	1.19	1.32		1.29
1926	2.20	.14	1.24	1.12	1.39		1.36
1927	2.17	.15	1.23	1.21	1.49		1.46
1928	2.37	.19	1.37	1.10	1.51		1.48
1929	2.60	.14	1.44	1.03	1.49	1.45	1.45
1930	2.48	.17	1.41	.91	1.29	1.26	1.26
1931	2.13	.16	1.22	.93	1.14	1.11	1.11
1932	1.86	.17	1.10	1.01	1.11	1.06	1.06
1933	2.09	.20	1.24	.91	1.13	1.10	1.10
1934	2.43	.17	1.38	.87	1.20	1.18	1.18
1935	2.58	.20	1.49	.94	1.40	1.35	1.35
1936	2.85	.26	1.68	.92	1.54	1.52	1.52
1937	2.70	.25	1.60	.86	1.38	1.39	1.39
1938	2.64	.18	1.50	.96	1.44	1.43	1.43
1939	2.71	.22	1.57	.91	1.43	1.42	1.42
1940	2.67	.16	1.49	.96	1.43	1.40	1.40
1941	3.06	.09	1.62	.97	1.57	1.48	1.48
1942	2.68	.11	1.45	.77	1.12	1.33	1.33
1943	2.74	.08	1.45	.77	1.12	1.15	1.15
1944	2.86	.23	1.66	.74	1.23	1.32	1.32
1945	3.17	.27	1.85	.80	1.48	1.61	1.61
1946	3.04	.27	1.79	.87	1.56	1.49	1.49
1947	3.01	.20	1.70	.90	1.53	1.47	1.47
1948	3.13	.38	1.94	.83	1.61	1.57	1.57
1949	3.29	.32	1.96	.87	1.70	1.60	1.60
1950	3.29	.52	2.16	.81	1.74	1.76	1.76
1951	3.03	.48	1.99	.89	1.78	1.72	1.72
1952	2.76	.64	2.02	.89	1.79	1.73	1.73
1953	2.50	.66	1.91	.90	1.71	1.81	1.81
1954	2.68	.74	2.08	.84	1.74	1.82	1.82
1955	2.56	.66	1.94	.85	1.65	1.71	1.71
1956	2.67	.69	2.02			1.72	1.72
1957	2.46	.80	2.03			1.73	1.73

FC-13, SOURCES

COL. A, Table FO-15, Col. A, transcribed.
COL. B, Table FC-12, Col. M, transcribed.
COL. C, Col. B plus ½ of Col. A.
COL. D, Ratio, Col. E/Col. C.
COL. E, U. S. population (Table N-2) multiplied by per capita consumption, as follows.
1880-1908. Estimated by James A. Crutchfield in "Basic Statistics of the Commercial Fisheries of the United States, 1880-1955" (a study prepared at the University of Washington, Seattle, 1957, for Resources for the Future).
1909-55. Compiled by Crutchfield (*op. cit.*) from estimates of the Fish and Wildlife Service.
COL. F, U. S. Department of Agriculture, *Consumption of Food,* p. 68, and *The National Food Situation,* July 1958, p. 71.
COL. G, Preferred series, consumption in terms of edible weights.
1880-1928. Col. E multiplied by average ratio of Col. F/Col. E for 1929-39 (ratio, .98).
1929-57. Col. F, transcribed.

FC-13, NOTES

COL. D. The considerable fluctuations in this ratio are an indication of the large adjustments made in landed weights to estimate edible weights. Imports require much less adjustment, since they enter mostly at edible weights. In addition to the adjustments, of course, some of the difference between Col. C and Col. E is due to changes in inventory held over from year to year.

COL. G. Our preferred series estimates consumption of edible products, thus excluding consumption of menhaden, inedible oils, pearls, sponges, etc. Because of the sporadic and ill-defined nature of the statistics for earlier years, the reader is cautioned to use this series as an indication of trend rather than as a representation of absolute amounts.

FL-5. FISHING: Employment

(1000 persons)

	1940 Census, fishermen & oystermen		1950 Census		Fish and Wildlife Service, fishermen			Taylor & FWS, fishermen, all except Miss. River & Alaska	Col. H / Col. A	Col. E / Col. B	Preferred series, fishermen, all areas
	1930 basis	1940 basis	Fishermen and oystermen	Fisheries employees	All areas	All areas except Miss. River system	Pacific area				
	A	B	C	D	E	F	G	H	I	J	K
1870	28										(80)
1880	41										(120)
1887								110			136
1888							10.5	113			140
1889								129			160
1890	60							137	2.3		170
1891								138			(170)
1892							11.0	139			(170)
1893								140			(170)
1894								141			(170)
1895							13.4	142			(180)
1896								142			(180)
1897								143			177
1898								142			(180)
1899							12.9	143			(180)
1900	69							144	2.1		(180)
1901								145			(180)
1902								143			(180)
1903								141			(170)
1904							13.7	139			(170)
1905								137			(170)
1906								134			(170)
1907								132			(160)
1908							13.4	130			161
1909								—			-
1910	68	65									(170)
1911											-
1912											-
1913											-
1914											-
1915							18.5	111			(140)
1916								—			-
1917								103			(130)
1918								99			(120)
1919								97			(120)
1920	53	50						94	1.77		(120)
1921								93			(120)
1922							13.4	91			(110)
1923							14.2	92			(110)
1924							15.4	94			(120)
1925							16.9	97			(120)
1926							18.6	99			(120)
1927							20.5	101			125
1928							19.7	100			124
1929						111	20.0	100			124
1930	73	70			120	107	19.6	97	1.33	1.71	120
1931						107	19.2	98			120
1932						100	17.9	92			113
1933						104	18.7	95			117
1934						109	19.2	99			123
1935						111	20.6	101			126
1936						113	20.6	101			128
1937						114	21.6	102			130
1938						114	23.6	103			130
1939						115	25.0	104			131
1940		63	56		125	109	25.2	99		1.98	125
1941						104	[a] 23.1	94			119
1942						96	21.0	87			110
1943						103	23.1	94			118
1944						107	25.1	98			122
1945						126	34.0	118			144
1946						134	[a] 32.2	124			152
1947						140	30.4	128			159
1948						142	30.1	130			161
1949						142	31.8	131			161
1950		69	68	79	161	142	31.7	131		2.33	161
1951						140	28.7	125			159
1952					152	132	26.8	120			152
1953					153	134	27.3	122			153
1954					145	131	26.4	121			145
1955					144	131		120			144
1956					142	127		116			142
1957					138	124		117			138

FL-5, SOURCES

COL. A, Alba M. Edwards, *Comparative Occupation Statistics for the United States, 1870 to 1940* (in *1940 Census of Population*), p. 104, fishermen and oystermen (labor force 10 years and over).

COL. B

1910-40. *Ibid.*, page 62, fishermen and oystermen, adjusted to 1940 basis (labor force 14 years and over).

1950. *1950 Census of Population*, Vol. II, Part I, p. 1C-15, fishermen and oystermen, total, all industries.

COL. C, *1950 Census of Population*, Vol. II, Part I, Table 125, detailed occupation of employed persons, 1950 and 1940: laborers, except farm and mine: fishermen and oystermen.

COL. D, *Ibid.*, p. 1C-12, total employed, fisheries.

COL. E

1930-50. E. A. Power, *Fisheries of the United States 1959: A Preliminary Review* (U.S. Fish and Wildlife Service, Fishery Leaflet 393, Washington, 1960), p. 22.

1952-57. *Fishery Statistics of the United States*, annual volumes, table on summary of operating units: fishermen, on vessels, and fishermen, on boats and shore.

COL. F

1929-51. James A. Crutchfield, "Basic Statistics of the Commercial Fisheries of the United States, 1880-1955" (a study prepared for Resources for the Future, Inc., Seattle, 1957), Table 7, fishermen (compiled from data published by the Fish and Wildlife Service and its predecessors). We have interpolated (by straight line method) for some areas in some years, where surveys were lacking.

1952-57. *Fishery Statistics of the United States*, annual volumes, table on summary of operating units, total fishermen (exclusive of duplication) minus Mississippi River and tributaries.

COL. G, Crutchfield, *op. cit.*

COL. H

1887-1940. Harden F. Taylor and associates, *Survey of Marine Fisheries of North Carolina* (University of North Carolina Press, 1951), Appendix to Part III, pp. 480-81.

1941-51. Crutchfield, *op. cit.*

1952-57. *Fishery Statistics of the United States, loc. cit.*

COL. I, Ratio, Col. H/Col. A.

COL. J, Ratio, Col. E/Col. B.

COL. K, Preferred series, all fishermen (including shore workers), all areas

1870, 1880, 1910. Rough extrapolations of Col. K by Col. A.

1887-1908, 1915-28. Col. H times ratio of Col K/Col. H in 1929 (ratio, 1.24).

1929-57. Col. E, transcribed and interpolated by Col. F.

FL-5, NOTES

[a] Interpolated (straight line method).

( ) Rough estimate.

The large and quite variable ratios in Cols. I and J reflect the serious discrepancies in definition and coverage in the surveys which have been made. Comparing the various columns reveals additional unexplained differences.

The data of the Fish and Wildlife Service (and predecessor agencies) suffered considerably before 1929 from very spotty coverage of the different areas, and from dependency on state surveys which may not always have provided good and careful coverage. Coverage no doubt improved in the latter years of the period. The extrapolations in Col. K are based on so little data for most years (see Taylor, *op. cit.*, p. 477, for notes on coverage) that we designate most of them as rough estimates. Parenthetical figures are given for years in which fewer than four of the total of nine regions were subjected to canvass.

The large differences between the Census and Fish and Wildlife Service figures are probably due to inclusion of considerable numbers of shore workers in the latter but not in the former; Census would classify most plant workers in manufacturing or service industries. In addition, Fish and Wildlife may have secured better coverage of sailors on fishing vessels — occupation enumerators sometimes failed to seek distinctions as to kind of vessel sailed (cf. Daniel Carson, "Changes in the Industrial Composition of Manpower Since the Civil War," in *Studies in Income and Wealth*, Vol. XI, National Bureau of Economic Research, New York, 1949, pp. 66-67), and the Censuses missed some sailors at sea or temporarily unemployed owing to the seasonal nature of the industry (Edwards, *op. cit.*, p. 33, and Carson, *loc. cit.*).

FL-6. FISH: Employment/Output

	Employment (1000)	Output (bil. lb.)	Preferred series, employment/output (Col. A/Col. B) (men per mil. lb.)
	A	B	C
1880	(120)	1.71	(70)
1887	136	1.42	96
1888	140	1.57	89
1889	160	1.77	90
1890	170	1.84	92
1897	177	1.68	105
1908	161	2.12	76
1910	(170)	2.18	(78)
1919	(120)	2.65	(45)
1920	(120)	2.62	(46)
1927	125	2.74	46
1928	124	3.03	41
1929	124	3.56	35
1930	120	3.28	37
1931	120	2.66	45
1932	113	2.62	43
1933	117	2.97	39
1934	123	4.09	30
1935	126	4.21	30
1936	128	4.85	26
1937	130	4.36	30
1938	130	4.26	31
1939	131	4.45	29
1940	125	4.07	31
1941	119	4.71	25
1942	110	3.94	28
1943	118	4.10	29
1944	122	4.49	27
1945	144	4.59	31
1946	152	4.44	34
1947	159	4.45	36
1948	161	4.55	35
1949	161	4.70	34
1950	161	4.88	33
1951	159	4.41	36
1952	152	4.42	34
1953	153	4.47	34
1954	145	4.74	31
1955	144	4.79	30
1956	142	5.25	27
1957	138	4.78	29

FL-6, SOURCES

Col. A, Employment. Table FL-5, Col. K, transcribed.
Col. B, Output. Table FO-15, Col. F, transcribed.
Col. C, Preferred series, employment/output. Ratio, Col. A/Col. B.

FL-6 NOTES

( ) Doubtful estimate.

The ratios are fairly speculative because of the dubious nature of the data on which most of them are founded (see Tables FL-5 and FO-15). The most highly dubious ratios we have enclosed in parentheses.

An additional problem is one of heterogeneity of the data. The output series is a simple aggregate of fish and shellfish which sold at prices ranging from 1.31 cents to 50 cents per pound in 1957 (Table FP-12). This meant that for some fish it was worth while to go great distances to catch them and it was worth while to expend labor for light catches. Whenever the total catch was more heavily weighted with the cheaper fish, the employment/output ratio was likely to be lower. This factor was probably most important in the case of menhaden, the chief nonedible fish, which in the last few years was caught in enormous quantities by very cheap methods, constituting as much as a third of the total weight of catch, as against less than 10% in 1929. An indication of the effect this had on employment/output can be observed in the low ratios of employment to output in the Middle Atlantic states: In 1957 menhaden was 88% of the total catch by weight in this region, and employment per million pounds of catch was 10 as against 31 for the industry as a whole.

Legal restrictions on methods of catching (for "conservation": for example, laws against dredging oysters and trapping salmon) have had a significant effect in limiting the decline in employment per unit of output.

MINERALS (M)

Minerals: Price (MP)

MP-1. MINERALS: Price

	Fuels	Metals	Nonmetals	Preferred series, all minerals, price ($ mil.)		
	($ million, 1954 output weights)			1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F
1870	9179	743		1243	5685	12378
1871	10212	791		1288	6159	13726
1872	8668	1110		1307	5820	12198
1873	4748	987		1129	4048	7154
1874	3247	783		950	3110	5027
1875	3604	712		914	3144	5384
1876	6159	629		925	4043	8468
1877	5734	571		790	3652	7865
1878	3009	489		615	2334	4364
1879	2276	531		588	2051	3502
1880	2578	662	802	748	2483	4042
1881	2476	585	979	749	2411	4040
1882	2170	620	946	732	2325	3736
1883	2850	528	802	721	2418	4180
1884	2225	478	769	629	2055	3472
1885	2374	416	756	689	2137	3546
1886	1993	411	665	631	1929	3069
1887	2038	433	606	652	1973	3077
1888	2363	516	632	658	2130	3511
1889	2475	470	704	624	2118	3649
1890	2323	515	715	649	2109	3553
1891	1888	454	851	622	1945	3193
1892	1650	408	711	591	1764	2769
1893	1878	378	603	586	1771	2859
1894	2139	331	533	553	1773	3003
1895	3054	357	518	578	2112	3929
1896	2764	359	541	566	2010	3664
1897	2016	358	562	527	1739	2936
1898	2337	370	640	541	1894	3347
1899	3189	555	628	649	2406	4372
1900	3431	536	642	703	2549	4609
1901	2943	498	664	693	2358	4105
1902	2864	486	678	709	2359	4028
1903	3244	495	716	771	2586	4455
1904	3053	439	684	701	2386	4176
1905	2427	515	684	687	2207	3626
1906	2338	623	728	744	2317	3689
1907	2332	662	748	759	2371	3742
1908	2256	469	751	695	2145	3476
1909	2128	474	741	670	2072	3343
1910	1951	466	718	677	2015	3135
1911	1970	446	714	672	2004	3130
1912	2363	526	709	731	2253	3598
1913	3027	507	716	760	2498	4250
1914	2651	451	727	724	2298	3829
1915	2223	562	1259	731	2330	4044
1916	3675	807	1982	913	3317	6464
1917	5474	999	2123	1326	4658	8596
1918	6856	898	1949	1478	5223	9703
1919	6693	717	1547	1474	5042	8957
1920	9941	807	1518	2034	7088	12266
1921	6022	480	1177	1570	4709	7679
1922	5966	535	997	1604	4717	7498
1923	5015	592	1007	1534	4309	6614
1924	4992	537	1013	1394	4061	6542
1925	5598	564	1004	1368	4258	7166
1926	6011	546	1030	1419	4450	7587
1927	4705	509	1008	1311	3817	6222
1928	4591	503	1007	1275	3725	6101
1929	4673	572	990	1275	3810	6235
1930	4307	479	976	1203	3516	5762
1931	2983	374	967	1075	2793	4324
1932	3247	308	917	966	2700	4472
1933	2794	366	911	952	2560	4071
1934	3710	414	919	1098	3151	5043
1935	3604	420	886	1083	3108	4910
1936	3824	445	907	1114	3250	5176
1937	4076	555	934	1177	3536	5565
1938	3889	481	947	1159	3388	5317
1939	3560	492	913	1100	3193	4965
1940	3563	522	917	1144	3279	5002
1941	3994	552	941	1259	3616	5487
1942	4172	564	969	1332	3790	5705
1943	4345	567	989	1475	4045	5901
1944	4476	567	1016	1586	4241	6059
1945	4559	577	1040	1654	4370	6176
1946	5188	639	1092	1886	4941	6919
1947	6731	849	1172	2251	6175	8752
1948	8681	979	1237	2646	7526	10897
1949	8471	971	1278	2642	7418	10720
1950	8503	1011	1299	2680	7481	10813
1951	8675	1189	1359	2803	7806	11223
1952	8708	1185	1373	2777	7784	11266
1953	9211	1228	1409	2840	8043	11848
1954	9324	1246	1410	2662	7867	11980
1955	9306	1379	1427	2665	7974	12112
1956	9550	1489	1458	2829	8368	12497
1957	10278	1321	1474	2926	8673	13073

MP-1, SOURCES

Computation of Index with 1954 Output Weights:

COL. A, Fuels. Table MP-2, Col. G, transcribed.

COL. B, Metals. Table MP-10, Col. I, transcribed.

COL. C, Nonmetals. Table MP-26, Col. M, transcribed.

COLS. D and E, Preferred series, all minerals, price, 1902 and 1929 output weights. Computed exactly as Col. F, except that 1902- and 1929-weighted price columns were transcribed from the source tables.

COL. F, Preferred series, all minerals, price, 1954 output weights. Sum, Cols. A through C.

MP-2. MINERAL FUELS: Price

(million dollars; 1954 output weights, except as noted)

	Crude petroleum	Natural gas	Bituminous coal	Anthracite	All mineral fuels		
					1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G
1870	6740	(1661)	714	64	927	4280	9179
1871	7578	(1868)	703	(63)	955	4653	10212
1872	6355	(1566)	686	(61)	885	4056	8668
1873	3195	(787)	703	(63)	757	2611	4748
1874	2043	(503)	644	(57)	651	1978	3247
1875	2357	(581)	612	(54)	639	2075	3604
1876	4470	(1102)	539	(48)	671	2942	6159
1877	4225	(1041)	430	(38)	565	2655	5734
1878	2078	(512)	385	(34)	427	1581	3009
1879	1502	(370)	371	(33)	390	1290	2276
1880	1641	(404)	490	43	499	1545	2578
1881	1589	(392)	437	58	498	1488	2476
1882	1344	(331)	437	58	487	1375	2170
1883	1903	(469)	420	58	500	1611	2850
1884	1449	(357)	367	52	429	1310	2225
1885	1502	(370)	444	58	498	1455	2374
1886	1222	(301)	413	57	462	1278	1993
1887	1240	(306)	434	58	480	1321	2038
1888	1536	(379)	392	56	458	1393	2363
1889	1641	(404)	388	42	429	1403	2475
1890	1519	(374)	388	42	423	1346	2323
1891	1170	(288)	388	42	409	1185	1888
1892	978	(241)	385	46	406	1099	1650
1893	1170	(288)	374	46	409	1174	1878
1894	1397	(344)	354	44	399	1246	2139
1895	2148	(529)	336	41	415	1564	3054
1896	1921	(473)	326	44	407	1451	2764
1897	1327	(327)	318	44	373	1166	2016
1898	1589	(392)	315	41	377	1275	2337
1899	2252	(555)	340	42	426	1622	3189
1900	2392	(590)	406	43	478	1779	3431
1901	1990	(491)	413	49	477	1616	2943
1902	1903	(469)	438	54	500	1621	2864
1903	2165	(534)	486	59	559	1825	3244
1904	2060	(508)	430	55	506	1689	3053
1905	1571	(387)	416	53	471	1437	2427
1906	1484	(366)	434	54	491	1422	2338
1907	1467	(361)	448	56	493	1437	2332
1908	1414	(349)	438	55	482	1397	2256
1909	1327	(327)	420	54	462	1330	2128
1910	1170	(288)	438	55	471	1283	1951
1911	1187	(293)	434	56	472	1290	1970
1912	1484	(366)	452	61	510	1465	2363
1913	2008	(495)	462	62	541	1725	3027
1914	1711	(422)	458	60	521	1578	2651
1915	1379	(340)	444	60	498	1404	2223
1916	2479	(611)	518	67	613	2035	3675
1917	3614	(891)	886	83	944	3106	5474
1918	4609	(1136)	1012	99	1109	3782	6856
1919	4871	726	976	120	1133	3807	6693
1920	7508	822	1470	141	1610	5641	9941
1921	3859	883	1134	146	1261	3703	6022
1922	3667	970	1183	146	1291	3711	5966
1923	2933	874	1050	158	1200	3237	5015
1924	3160	813	861	158	1081	3060	4992
1925	3824	822	798	154	1055	3238	5598
1926	4208	831	808	164	1099	3436	6011
1927	3003	769	780	153	1009	2863	4705
1928	2933	778	728	152	969	2761	4591
1929	3108	717	696	152	952	2776	4673
1930	2829	664	665	149	912	2598	4307
1931	1624	612	602	145	814	1993	2983
1932	2043	560	514	130	735	1997	3247
1933	1606	542	525	121	706	1807	2794
1934	2375	525	686	124	848	2346	3710
1935	2287	507	693	117	833	2299	3604
1936	2532	481	690	121	848	2399	3824
1937	2759	446	760	111	878	2554	4076
1938	2584	428	763	114	882	2492	3889
1939	2305	428	721	106	824	2298	3560
1940	2305	393	749	116	865	2355	3563
1941	2584	428	858	124	967	2646	3994
1942	2671	446	924	131	1031	2794	4172
1943	2689	455	1054	147	1156	3022	4345
1944	2724	446	1144	162	1251	3197	4476
1945	2759	428	1200	172	1312	3308	4559
1946	3178	463	1348	199	1488	3758	5188
1947	4365	525	1631	210	1749	4677	6731
1948	5919	568	1956	238	2088	5842	8681
1949	5762	551	1914	244	2069	5732	8471
1950	5779	568	1897	259	2093	5757	8503
1951	5832	638	1928	277	2159	5882	8675
1952	5832	682	1922	272	2146	5872	8708
1953	6198	804	1928	281	2190	6082	9211
1954	6425	883	1770	248	2015	5887	9324
1955	6408	909	1760	229	1967	5828	9306
1956	6478	944	1890	238	2078	6067	9550
1957	7141	988	1992	262	2227	6548	10278

MP-2, SOURCES

Computation with 1954 Output Weights:

Col. A, Crude petroleum. Table MP-4, Col. V, times 1746 mil. bbl. (1954: total value of petroleum divided by price index).[1]

Col. B, Natural gas

1870-1918. Table MP-4, Col. V, times average 1922-26 ratio of Col. B to Table MP-4, Col. V (430.3 million).

1919-57. Table MP-6, Col. I, times 8743 bil. cu. ft. (1954: total value of natural gas divided by price).[1]

Col. C, Bituminous coal. Table MP-8, Col. I, times 350 mil. long tons (1954: value of bituminous coal divided by price).[1]

Col. D, Anthracite. Table MP-9, Col. D, times 29.1 mil. tons (1954: total value of anthracite divided by price).[1] (1871-79 interpolated by bituminous coal price, Table MP-8, Col. I.).

Cols. E and F, Price indicators, all mineral fuels, 1902 and 1929 output weights. Computed exactly as Col. G except that 1902 and 1929 outputs were used as weights in the computation. (For weights, see notes, below.)

Col. G, Price indicator, all mineral fuels, 1954 output weights. Sum of Cols. A through D.

MP-2, NOTES

( ) Extrapolated figure (see source note).

[1] Total value figures are from *Min. Yearbook, 1957*, Vol. II, pp. 346 and 305.

Cols. E and F. The weights used in the computation of the 1902- and 1929-weighted price indicators are as follows:

Commodity	*1902 output weights*	*1929 output weights*
A Crude petroleum	65.3 mil. bbl.	719 mil. bbl.
B Natural gas	.280 bil. thous. cu. ft.	1.92 bil. thous. cu. ft.
C Bituminous coal	233 mil. long tons	479 mil. long tons
D Anthracite	67.07 mil. short tons	73.9 mil. short tons

MP-3. AVERAGE PRICE OF MINERAL FUELS PER BTU OF OUTPUT

	Energy content, all mineral fuels (quadrillion Btu)	Value ($ million, current prices)					Average price ($ per 10 mil. Btu)
		Bituminous coal	Anthracite	Petroleum	Natural gas	Total mineral fuels	
	A	B	C	D	E	F	G
1870	1.07	37.3	43.8	20.5		102	.95
1871	1.12	40.9	41.5	22.6		105	.94
1872	1.38	47.8	51.4	22.9		122	.88
1873	1.53	56.6	54.5	18.1		129	.84
1874	1.48	50.4	47.4	12.8		111	.75
1875	1.49	50.9	43.0	11.9		106	.71
1876	1.47	43.9	37.2	22.9		104	.71
1877	1.63	37.8	33.4	31.9		103	.63
1878	1.59	35.7	25.4	18.0		79	.50
1879	1.94	38.4	33.8	17.1		89	.46
1880	2.21	63.5	42.1	24.7		130	.59
1881	2.33	58.1	64.2	25.5		148	.64
1882	2.61	66.0	70.6	23.6		160	.61
1883	2.82	69.4	77.3	25.7		172	.61
1884	2.99	67.4	66.5	20.6	*	155	.52
1885	3.06	81.1	76.7	19.3	2	180	.59
1886	3.28	78.3	76.1	20.0	4	179	.55
1887	3.81	98.3	84.6	19.0	7	208	.55
1888	4.38	102	89.0	17.9	9	217	.49
1889	4.14	94.7	65.6	27.1	9	196	.47
1890	4.62				8	220	.48
1891	4.89				7	228	.47
1892	5.11				6	239	.47
1893	5.17				6	244	.47
1894	4.87				6	228	.47
1895	5.46				5	260	.48
1896	5.50				5	260	.47
1897	5.72				6	246	.43
1898	6.23				6	259	.42
1899	7.16				8	329	.46
1900	7.53				10	392	.52
1901	8.23				11	426	.52
1902	8.61				13	451	.52
1903	10.2				15	613	.60
1904	10.1				16	562	.56
1905	11.4				17	577	.51
1906	11.9				19	624	.52
1907	13.9				22	757	.54
1908	12.3				23	684	.56
1909	13.6				26	709	.52
1910	14.8				29	786	.53
1911	14.8				31	792	.54
1912	15.8				35	896	.57
1913	16.9				36	1036	.61
1914	15.6				39	938	.60
1915	16.2				41	913	.56
1916	17.9				49	1262	.70
1917	19.8				58	2154	1.09
1918	20.5				63	2645	1.29
1919	17.4				66	2416	1.39
1920	20.6				80	4077	1.98
1921	16.7				72	2600	1.56
1922	16.5				91	2607	1.58
1923	22.5				98	3175	1.41
1924	20.3				104	2749	1.35
1925	20.9					2910	1.39
1926	23.1					3371	1.46
1927	22.4					2875	1.28
1928	22.0					2666	1.21
1929	23.9					2940	1.23
1930	21.4					2500	1.17
1931	18.3					1620	.88
1932	15.7					1460	.93
1933	17.0					1413	.83
1934	18.1					1947	1.08
1935	19.0					2013	1.06
1936	21.7					2405	1.11
1937	23.1					2798	1.21
1938	19.9					2436	1.22
1939	21.8					2423	1.11
1940	24.2					2662	1.10
1941	26.2					3228	1.23
1942	28.3					3568	1.26
1943	29.6					4028	1.36
1944	31.8					4574	1.44
1945	30.9					4569	1.48
1946	30.1					5090	1.69
1947	33.8					7188	2.13
1948	34.5					9502	2.75
1949	29.2					7920	2.72
1950	32.9					8689	2.64
1951	36.2					9779	2.70
1952	35.2					9616	2.73
1953	35.5					10257	2.88
1954	33.9					9919	2.92
1955	37.5					10780	2.88
1956	40.0					11741	2.94
1957	40.3					12709	3.15

MP-3, SOURCES

COL. A, Energy content of mineral fuels produced (quadrillion British thermal units). Table MO-3, Col. G.

COL. B, Value of bituminous coal in current dollars. Table MO-5, Col. B, times Table MP-8, Col. I (converted to $ per short ton by 2000/2240=.893).

COL. C, Value of anthracite

1870-79. Table MO-6, Col. B, times Table MP-8, Col. I (bituminous coal price) times the 1870, 1880 average ratio of anthracite price per ton to bituminous price per ton (Tables MP-8 and MP-9: ratio 1.06).

1880-89. Table MO-6, Col. B, times Table MP-9, Col. D.

COL. D, Value of petroleum. Table MO-4, Col. A, times Table MP-4, Col. L.

COL. E, Value of natural gas. *Hist. Stat. 1960,* series M-18, times the 1922-1926 average ratio of Table MP-6, Col. B (ratio, .41).

COL. F, Value of total mineral fuels

1870-84. Sum of Cols. B, C, and D.

1885-1924. *Hist. Stat. 1960,* series M-14, minus series M-18 (natural gas) plus Col. E.

1925-56. *Hist. Stat. 1960,* series M-14.

1957. *Min. Yearbook 1959,* Vol. II, p. 6.

COL. G, Average price of mineral fuels per unit of output in British thermal units. Ratio, Col. F/Col. A.

MP-3, NOTES

* Less than $500,000.

COL. E. *Hist. Stat. 1960,* series M-18, subsequent to 1924 represents the value of natural gas at the well, while figures for 1924 and prior years represent the value at the point of consumption. To adjust the latter value, a five year link has been taken (1922-26) between the average price at the well and the average price at the point of consumption.

COL. F. The *Historical Statistics* series is practically identical to our calculation after 1884, as can be seen by adding Cols. B through D. This series does not extend before 1880, however, and is somewhat different from ours in the period 1880-84.

MP-4. PETROLEUM: Price

	Appalachian (Pa. from 1914)	California	Lima–Indiana	Mid-Continent (Kans. from 1919)	Gulf (Tex. & La. from 1919)	Illinois	Northern Louisiana	Wyoming	All other Texas	Arkansas	New Mexico
	(dollars per barrel)										
	A	B	C	D	E	F	G	H	I	J	K
1870	3.86										
1871	4.34										
1872	3.64										
1873	1.83										
1874	1.17										
1875	1.35										
1876	2.56	2.50									
1877	2.42	2.50									
1878	1.19	2.31									
1879	.86	2.31									
1880	.94	2.31									
1881	.91	2.31									
1882	.77	2.31									
1883	1.09	2.31									
1884	.83	2.31									
1885	.86	2.31									
1886	.70	2.31	.39								
1887	.71	2.31	.20								
1888	.88	2.01	.15								
1889	.94	1.17	.15	5.00	7.10						
1890	.87	1.25	.30	7.00	4.20						
1891	.67	1.24	.31	6.96	4.20						
1892	.56	1.46	.37	1.08	5.00						
1893	.64	1.29	.47	1.00	4.20						
1894	.84	1.17	.48	1.02	5.00						
1895	1.36	.70	.70	.60	5.00						
1896	1.18	.99	.66	.46	5.00						
1897	.79	.90	.48	.49	5.00						
1898	.91	.85	.61	.50	5.00						
1899	1.29	.95	.89	.71	5.00						
1900	1.35	.94	.98	1.03				7.00			
1901	1.21	.57	.85	.79	.17			7.00			
1902	1.24	.35	.89	.76	.21			7.00			
1903	1.59	.30	1.15	1.05	.41			7.00			
1904	1.63	.28	1.09	.95	.36			7.00			
1905	1.39	.24	.87	.55	.24			6.10			
1906	1.60	.29	.91	.45	.46	.74		7.00			
1907	1.74	.37	.91	.41	.84	.68		2.34			
1908	1.78	.52	1.00	.39	.60	.67		1.57			
1909	1.63	.55	.91	.37	.72	.64		1.72			
1910	1.33	.49	.79	.39	.76	.59		.81			
1911	1.30	.48	.82	.48	.67	.63	.52	.66			
1912	1.63	.45	.93	.69	.74	.85	.76	.51			
1913	2.46	.47	1.38	.95	.94	1.30	1.00	.49			
1914	1.88	.48	1.18	.80	.67	1.16	.95	.47			
1915	1.59	.42	.97	.59	.48	.98	.62	.52			
1916	2.52	.59	1.57	1.19	.75	1.65	1.03	.91			
1917	3.25	.92	1.94	1.73	1.07	1.99	1.64	1.23			
1918	4.00	1.22	2.31	2.19	1.70	2.34	1.73	1.44	2.22		
1919	4.14	1.41		2.33	1.18	2.48	1.62	1.48	2.27		
1920	5.98	1.73		3.42	2.70	3.67	3.18	2.97	3.42		
1921	3.33	1.80		1.88	1.17	2.05	1.60	1.22	1.70		
1922	3.21	1.25		1.77	1.22	2.06	1.52	1.27	1.76		
1923	3.33	.92		1.63	1.38	1.87	1.48	1.09	1.50		
1924	3.61	1.20		1.54	1.60	1.76	1.41	1.23	1.51		
1925	3.62	1.42		1.94	1.60	1.94	1.61	1.76	1.86		
1926	3.56	1.54		2.26	1.44	2.22	1.70	1.98	1.96		
1927	3.06	1.13		1.42	1.26	1.67	1.33	1.40	1.23	1.06	
1928	3.27	.99		1.36	1.18	1.54	1.20	1.28	1.15	.86	
1929	3.79	1.10		1.46	1.22	1.65	1.26	1.28	1.33	.88	
1930	2.61	1.20		1.32	1.06	1.59	1.15	1.25	1.14	.88	
1931	1.98	.72		.69	.66	.89	.64	.75	.54	.49	
1932	1.89	.81		.91	.81	1.01	.90	.82	.82	.64	
1933	1.87	.83		.66	.64	.87	.58	.59	.55	.42	
1934	2.43	.92		1.03	1.00	1.11	.93	.84	.91	.72	
1935	2.14	.82		1.03	1.00	1.11	.94	.85	.88	.72	
1936	2.43	1.01		1.13	1.10	1.20	1.07	.94	.97	.78	
1937	2.57	1.02		1.25	1.22	1.33	1.19	.98	1.07	.97	
1938	1.88	1.03		1.20	1.18	1.25	1.15	.95	1.05	.93	
1939	2.08	1.02		1.04	1.07	1.07	1.01	.85	.92	.79	.82
1940	2.29	.97		1.04	1.08	1.06	1.00	.80	1.00	.84	.83
1941	2.54	1.04		1.15	1.18	1.30	1.18	.86	1.10	.93	.94
1942	2.94	1.03		1.20	1.24	1.36	1.20	.88	1.14	.99	1.00
1943	2.98	1.05		1.20	1.26	1.37	1.21	.98	1.18	.99	1.00
1944	3.29	1.06		1.22	1.27	1.39	1.21	1.00	1.22	1.05	1.00
1945	3.73	1.06		1.24	1.28	1.40	1.20	1.01	1.25	1.07	1.01
1946	3.82	1.23		1.42	1.48	1.59	1.43	1.14	1.43	1.26	1.21
1947	4.19	1.72		1.93	2.03	2.10	1.99	1.68	1.96	1.82	1.77
1948	4.96	2.42		2.60	2.72	2.77	2.64	2.33	2.60	2.48	2.45
1949	3.57	2.26		2.58	2.70	2.77	2.63	2.28	2.58	2.48	2.44
1950	3.82	2.16		2.57	2.69	2.77	2.63	2.16	2.58	2.46	2.43
1951	4.25	2.25		2.57	2.68	2.77	2.63	2.15	2.56	2.48	2.45
1952	4.25	2.23		2.56	2.69	2.76	2.62	2.18	2.55	2.46	2.47
1953	4.29	2.49		2.69	2.86	2.89	2.76	2.37	2.70	2.60	2.63
1954	3.42	2.55		2.81	2.98	2.98	2.88	2.45	2.80	2.73	2.75
1955	3.54	2.50		2.80	2.98	2.91	2.86	2.41	2.79	2.71	2.74
1956	4.34	2.62		2.79	2.97	2.93	2.89	2.44	2.80	2.69	2.75
1957	4.73	3.05		3.01	3.37	3.12	3.24	2.66	3.05	2.92	2.99

	United States (dollars per barrel)	Col. V / Col. A	Col. V / Col. B	Col. V / Col. C	Col. V / Col. D	Col. V / Col. E	Col. V / Col. K	Col. V / Col. L	U.S. index, 1953-57 link	Col. V / Col. T	Preferred series, index of U.S. av. value (adjusted) ($/bbl.)
	L	M	N	O	P	Q	R	S	T	U	V
1870	3.90	1.00						.99	2.70	1.43	3.86
1871	4.40	1.00						.99	3.03	1.43	4.34
1872	3.75	1.00						.97	2.54	1.43	3.64
1873	1.80	1.00						1.02	1.28	1.43	1.83
1874	1.15	1.00						1.02	.82	1.43	1.17
1875	1.33	1.00						1.01	.94	1.44	1.35
1876	2.52	1.00	1.02					1.02	1.79	1.43	2.56
1877	2.38	1.00	.97					1.02	1.69	1.43	2.42
1878	1.17	1.00	.52					1.02	.83	1.43	1.19
1879	.86	1.00	.37					1.00	.60	1.43	.86
1880	.94	1.00	.41					1.01	.66	1.44	.94
1881	.92	1.00	.40					1.00	.65	1.42	.91
1882	.78	1.00	.33					.99	.55	1.40	.77
1883	1.10	1.00	.47					.99	.77	1.42	1.09
1884	.85	1.00	.36					.98	.60	1.38	.83
1885	.88	1.00	.37					.98	.63	1.36	.86
1886	.71	1.00	.30	1.79				.99	.51	1.37	.70
1887	.67	1.00	.31	3.46				1.06	.50	1.42	.71
1888	.65	1.00	.44	5.87				1.35	.48	1.83	.88
1889	.77	1.00	.80	6.27	.19	.13		1.22	.48	1.96	.94
1890	.77	1.00	.70	2.89	.12	.21		1.13	.51	1.71	.87
1891	.56	1.00	.54	2.19	.10	.16		1.20	.42	1.60	.67
1892	.51	1.00	.38	1.53	.52	.11		1.10	.39	1.44	.56
1893	.60	1.05	.52	1.43	.67	.16		1.12	.46	1.46	.67
1894	.72	.95	.69	1.67	.79	.16		1.11	.55	1.45	.80
1895	1.09	.90	1.75	1.76	2.03	.25		1.13	.84	1.46	1.23
1896	.96	.93	1.11	1.67	2.41	.22		1.15	.75	1.47	1.10
1897	.68	.97	.84	1.60	1.56	.15		1.12	.53	1.43	.76
1898	.80	1.00	1.07	1.48	1.83	.18		1.14	.63	1.44	.91
1899	1.13	1.00	1.36	1.44	1.82	.26		1.14	.89	1.45	1.29
1900	1.19	1.01	1.45	1.40	1.33	.00		1.15	.95	1.44	1.37
1901	.96	.94	2.01	1.33	1.45	6.51		1.19	.77	1.48	1.14
1902	.80	.88	3.13	1.22	1.44	5.22		1.36	.64	1.70	1.09
1903	.94	.78	4.09	1.07	1.19	3.02		1.32	.78	1.59	1.24
1904	.86	.72	4.23	1.08	1.25	3.31		1.37	.72	1.64	1.18
1905	.62	.65	3.67	1.03	1.63	3.75		1.45	.53	1.70	.90
1906	.73	.53	2.94	.94	1.87	1.86		1.16	.62	1.37	.85
1907	.72	.48	2.27	.92	2.05	1.00		1.17	.64	1.31	.84
1908	.72	.45	1.55	.81	2.07	1.34		1.12	.65	1.25	.81
1909	.70	.47	1.37	.84	2.05	1.05		1.09	.63	1.21	.76
1910	.61	.50	1.37	.84	1.71	.88		1.10	.56	1.20	.67
1911	.61	.52	1.43	.83	1.42	1.02		1.11	.57	1.19	.68
1912	.74	.52	1.87	.91	1.23	1.15		1.15	.69	1.23	.85
1913	.95	.47	2.46	.83	1.21	1.23		1.21	.89	1.29	1.15
1914	.81	.52	2.03	.83	1.22	1.45		1.21	.77	1.27	.98
1915	.64	.50	1.88	.81	1.35	1.65		1.23	.61	1.29	.79
1916	1.10	.56	2.41	.90	1.19	1.99		1.29	1.05	1.35	1.42
1917	1.56	.64	2.25	1.07	1.20	1.93		1.33	1.51	1.37	2.07
1918	1.98	.66	2.16	1.14	1.21	1.55		1.33	1.92	1.37	2.64
1919	2.01	.67	1.98	1.16	1.20	2.36		1.39	2.04	1.37	2.79
1920	3.07	.72	2.49		1.26	1.59		1.40	3.05	1.41	4.30
1921	1.73	.66	1.23		1.18	1.89		1.28	1.77	1.25	2.21
1922	1.61	.65	1.68		1.19	1.72		1.30	1.61	1.30	2.10
1923	1.34	.50	1.83		1.03	1.22		1.25	1.32	1.27	1.68
1924	1.43	.50	1.51		1.18	1.13		1.27	1.44	1.27	1.81
1925	1.68	.60	1.54		1.13	1.37		1.30	1.69	1.30	2.19
1926	1.88	.68	1.56		1.07	1.67		1.28	1.88	1.28	2.41
1927	1.30	.56	1.52		1.21	1.36		1.32	1.33	1.29	1.72
1928	1.17	.51	1.70		1.24	1.42		1.44	1.26	1.33	1.68
1929	1.27	.47	1.62		1.22	1.46		1.40	1.37	1.30	1.78
1930	1.19	.62	1.35		1.23	1.53		1.36	1.26	1.29	1.62
1931	.65	.47	1.29		1.35	1.41		1.43	.70	1.33	.93
1932	.87	.62	1.44		1.29	1.44		1.34	.88	1.33	1.17
1933	.67	.49	1.11		1.39	1.44		1.37	.70	1.31	.92
1934	1.00	.56	1.48		1.32	1.36		1.36	1.01	1.35	1.36
1935	.97	.61	1.60		1.27	1.31		1.35	.97	1.35	1.31
1936	1.09	.60	1.44		1.28	1.32		1.33	1.09	1.33	1.45
1937	1.18	.61	1.55		1.26	1.29		1.34	1.18	1.34	1.58
1938	1.13	.79	1.44		1.23	1.25		1.31	1.13	1.31	1.48
1939	1.02	.63	1.29		1.27	1.23	1.61	1.29	1.02	1.29	1.32
1940	1.02	.58	1.36		1.27	1.22	1.59	1.29	1.03	1.28	1.32
1941	1.14	.58	1.42		1.29	1.25	1.57	1.30	1.14	1.30	1.48
1942	1.19	.52	1.49		1.27	1.23	1.48	1.29	1.18	1.30	1.53
1943	1.20	.52	1.47		1.28	1.22	1.53	1.28	1.19	1.29	1.54
1944	1.21	.47	1.47		1.28	1.23	1.54	1.29	1.20	1.30	1.56
1945	1.22	.42	1.49		1.27	1.23	1.56	1.29	1.22	1.29	1.58
1946	1.41	.48	1.48		1.28	1.23	1.50	1.29	1.40	1.30	1.82
1947	1.93	.60	1.45		1.30	1.23	1.41	1.30	1.92	1.30	2.50
1948	2.60	.68	1.40		1.30	1.25	1.38	1.30	2.59	1.31	3.39
1949	2.54	.92	1.46		1.28	1.22	1.35	1.30	2.54	1.30	3.30
1950	2.51	.87	1.53		1.29	1.23	1.36	1.32	2.51	1.32	3.31
1951	2.53	.79	1.48		1.30	1.25	1.36	1.32	2.53	1.32	3.34
1952	2.53	.79	1.50		1.30	1.24	1.35	1.32	2.52	1.33	3.34
1953	2.68	.83	1.43		1.32	1.24	1.35	1.32	2.69	1.32	3.55
1954	2.78	1.08	1.44		1.31	1.23	1.34	1.32	2.79	1.32	3.68
1955	2.77	1.04	1.47		1.31	1.23	1.34	1.32	2.77	1.32	3.67
1956	2.79	.85	1.42		1.33	1.25	1.35	1.33	2.79	1.33	3.71
1957	3.09	.86	1.34		1.36	1.21	1.37	1.32	3.08	1.33	4.09

(Sources and Notes on next page)

MP-4, SOURCES

COL. A
1870-1914. Appalachian field average value. *Min. Resources 1914*, Part II, p. 934.
1915-57. Pennsylvania state average value *Petroleum Facts and Figures 1959*, p. 47. (1900-14 differences between Appalachian and Pennsylvania all less than 1%.)

COL. B, California state average value
1876-1914. *Min. Resources 1914*, Part II, p. 1042.
1915-57. *Petroleum Facts and Figures 1959*, p. 46.

COL. C, Lima (Ohio)-Indiana field. *Min. Resources 1918*, Part II, p. 1034.

COL. D
1889-1918. Mid-Continent field average value. *Min. Resources 1918*, Vol. II, p. 1053.
1919-57. Kansas state average value. *Petroleum Facts and Figures 1959*, p. 46. (1907-18 differences between Mid-Continent and Kansas all less than 1% except 1917 (6%)).

COL. E
1889-1918. Gulf field average value. *Min. Resources 1918*, Part II, p. 1077.
1919-57. Texas Gulf and Louisiana Gulf (arithmetic mean of two average values). *Petroleum Facts and Figures 1959*, p. 46-47. (1909-18 differences between Gulf field and Texas-La. average all less than 2% except 1911 (4%)).

COL. F, Illinois state average value
1906-18. *Min. Resources 1918*, Vol. II, p. 1046.
1919-57. *Petroleum Facts and Figures 1959*, p. 46.

COL. G, Northern Louisiana. *Ibid.*

COL. H, Wyoming state average value. *Ibid.*

COL. I, All other Texas (other than Gulf, West Texas, and East Texas), average value. *Ibid.*

COL. J, Arkansas state average value. *Ibid.*

COL. K, New Mexico state average value. *Ibid.*

COL. L, United States average value. *Ibid*, p. 41 (errors corrected).

COL. M, Ratio, Col. V/Col. A.

COL. N, Ratio, Col. V/Col. B.

COL. O, Ratio, Col. V/Col. C.

COL. P, Ratio, Col. V/Col. D.

COL. Q, Ratio, Col. V/Col. E.

COL. R, Ratio, Col. V/Col. K.

COL. S, Ratio, Col. V/Col. L.

COL. T, Index of U.S. average value per barrel. Calculated by linking each field average value in 1953-57 to the national average value (Col. L) in 1953-57 (geometric mean of 5 annual ratios used).

COL. U, Ratio, Col. V/Col. T.

COL. V, Preferred series, index of United States average value per barrel. Calculated by adjusting each field average value to the national average value for all the earlier fields, the ratio of adjustment or linkage being calculated at a decade of "normal" ratios (see notes, below).
1870-88. Appalachian field average value, which is also U.S. average. Col. A, transcribed.
1889-1957. Col. L of Worksheet 1 divided by Col. L of Worksheet 2, below.

MP-4, NOTES

The slight differences between Cols. A (Appalachian field) and L (U.S. total) in the period 1870-75 are apparently due to variations and discrepancies in figures published in *Mineral Resources of the U.S.* Cf. *Min. Resources 1918*, Part II, p. 993; *Hist. Stat.*, series M-134; and *Petroleum Facts and Figures 1959*, p. 41.

The price of petroleum presents in acute form many of the dilemmas and defects of price series as representations of the scarcity of resources. It was the object of great monopoly and manipulation and it was (and is) the object of government intervention in the forms of quota controls on output and imports. In addition, it has inherent problems which make it most difficult to determine what price is representative of scarcity.

First, because its cost of transportation to markets has generally been high in relation to the price at the wells, the available statistics on prices at the wells are of doubtful meaning relative to effective scarcity or availability to users. This problem has been at its worst when a large new field came in; for example, oil was selling at 15 cents per barrel in western Ohio in 1889, 94 cents in eastern Ohio, $3.36 in Illinois, and $7.10 in the Gulf region. Places remote from any well were presumably paying more than any of these prices, but data are lacking.

Second, the quality variations have been large; "crude oil" is not a single, uniform commodity. Moreover, the value of a given oil to the market has varied greatly as technology has developed. Pennsylvania oil was valued highly at first because it required little treatment for use as an illuminant; later because it provided a better quality lubricant. In 1957, with powerful instruments of refining and cracking and additives for gasoline and lubricants, as well as much cheaper transportation, Pennsylvania oil bore much less of a premium.

Both the levels and the movements of petroleum prices in the different fields have been radically different, though the differences diminish with time. Thus the selection, weighting, and linking of price series to produce the final index are so important that they largely determine the trend of the index; whether petroleum prices rose or fell between 1870 and 1957 depends on decisions as to which series to use and how to weight and link them.

Our incision in this Gordian knot has been along the lines employed in other series which present similar (though less acute) problems: We have perforce abandoned hope of reporting the cost to consumers because of lack of data, because the computation of an average for all consuming centers would be an enormous and impractical task, and because much of what has been shipped to consuming centers was not a raw material but a finished product, like kerosene or gasoline. Pricing the oil at a single producing or distribution center, on the other hand, appears too restricted a procedure, for none has remained important throughout the 88 year period and each has moved from being a shortage area to being a surplus area (or the reverse) within the period. We have therefore adopted a modified version of the average value at all wells:

(1) To allow for differences in quality and differences in proximity to markets, we have linked each series in to the average by means of a ten year average ratio, in a period which represented a degree of "normality." (What was "normal" has been a subjective decision, based on the degree of sustained stability in the ratio of price in the new field to price in a (preferably nearby) field that had been longer established; consideration was given also to the stability of output in the ten year period chosen.) This has meant raising the prices in each new series to roughly the level of the Pennsylvania (or Appalachian field) price so that the prices of poorer or more distant crudes should not lower the average price.

(2) To avoid the distortion which would be caused by bringing in new fields at their low-price points when they first began to produce a flood of oil, without adequate means of transportation or refining, we have omitted prices from new fields until they had approached their "normal" ratios to other markets. This avoids a dip in the national average each time a new field is brought in.

(3) As a time-saver, we have omitted some fields which produced less than 1% of total national output.

The resultant index responds to increasing and decreasing quantities of oil whose price changed after being linked in to the index computation, but it does not respond to increased quantities, for example, of low priced oils which were always low priced, since prices which were "normally" low have been adjusted upward in step (1), above. The index does, however, show a greater rise than Pennsylvania oil in recent years, because the premium on this oil has diminished considerably since 1946 (see chart below). Because of this changed differential in prices between Pennsylvania and other oils, and to remove the subjective element from the linking process, we present an alternative index which links the prices in all fields by their average ratio in 1953-57, rather than at various "normal" ten year periods following shortly after the bringing in of each field. This index also rises more than the Pennsylvania price, though less than our "preferred" series.

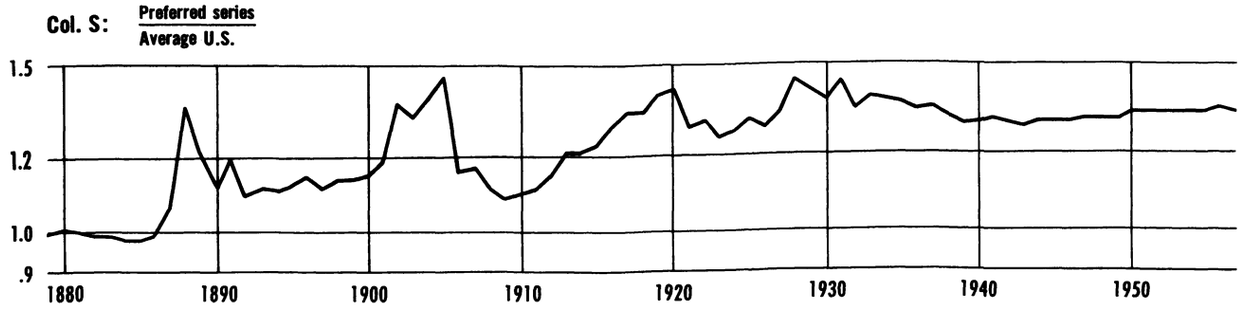
As an aid in evaluating the results, we present here the ratios of our preferred series to each of the "field" averages, to the unadjusted national average value, and to the adjusted index with linkages at 1953-57 (Col. T).

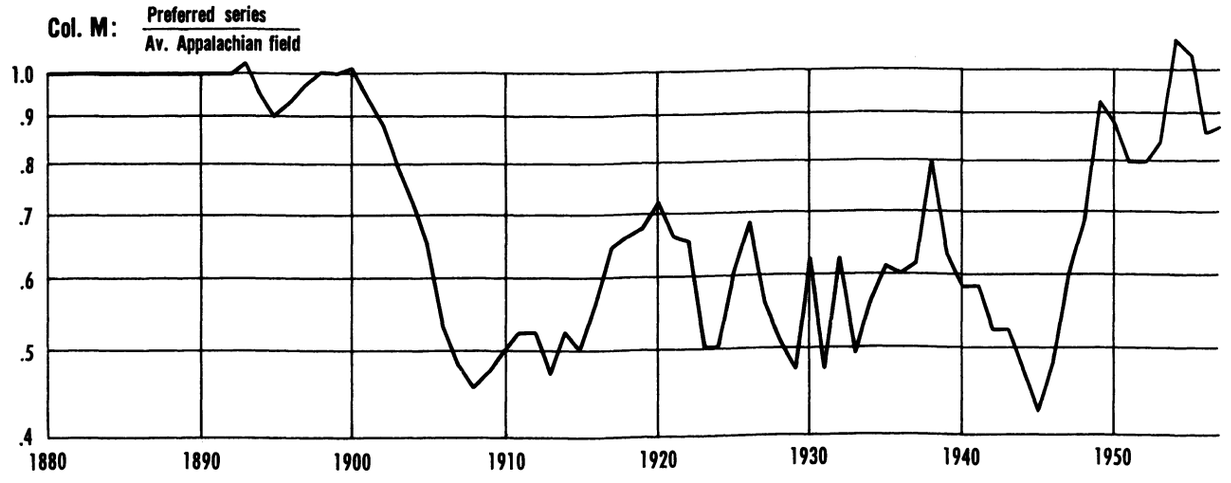
The ratios of our index to three series are of particular interest, and we plot them here:

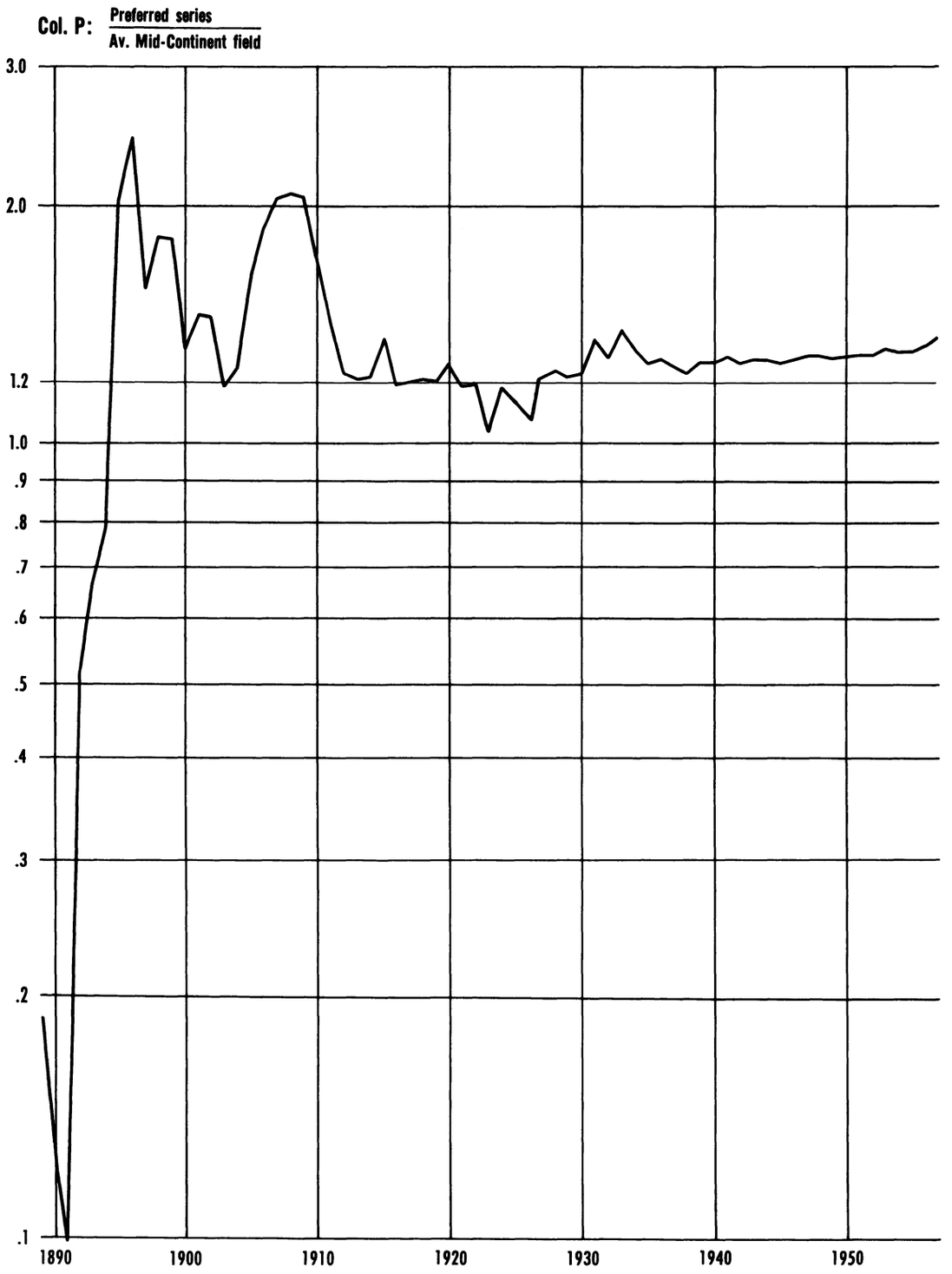
(1) The average value of all petroleum produced in the United States (Col. S).

(2) The average value in the Appalachian, or Pennsylvania field (Col. M).

(3) The average value in the Mid-Continent field (Col P). (See next page.)






Col. P: Preferred series / Av. Mid-Continent field
3.0
2.0
1.2
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
1890
1900
1910
1920
1930
1940
1950

MP-4, WORKSHEET 1. PETROLEUM PRICE INDEX: Adjusted Total Values of Outputs, by Fields

MP-4, Worksheet 1, SOURCES

COL. A, Col. A of Table MP-4 (above) times quantity weights in Col. A of Worksheet 2, below.

COL. B, Col. B of Table MP-4 times adjustment ratio (.793—see notes, below) times weights in Col. B of Worksheet 2.

COL. C, Col. C of Table MP-4 times adjustment factor (1.524—see notes, below) times weights in Col. C of Worksheet 2.

(Each column which follows, except the sum, Col. L, is computed as were Cols. B and C, from the adjusted price and the quantity weights.)

COL. L, Sum of Cols. A through K.

MP-4, Worksheet 1, NOTES

* Less than .05.

Adjustment ratios. These are designed to "link in" the average value of each field in such a way as not to bias the national average upward or downward by the bringing in of additional fields of higher or lower priced oil. The ratios were computed as the 10 year geometric average ratios of the annual national average values (computed without the new field) to the annual average values in the new field being "linked in."

(million dollars)

	Appalachian	California	Lima – Indiana	Mid-Continent	Gulf	Illinois	Northern Louisiana	Wyoming	All other Texas	Arkansas	New Mexico	Total
	A	B	C	D	E	F	G	H	I	J	K	L
1889	21.0	.3										21.3
1890	26.1	.3										26.4
1891	24.0	.3										24.3
1892	18.6	.5	8.9									27.9
1893	20.1	.5	11.4									32.0
1894	25.8	.7	12.7									39.1
1895	42.1	.7	21.6	*								64.4
1896	40.0	1.0	25.4	.1								66.5
1897	27.7	1.4	16.5	.1								45.7
1898	28.9	1.5	19.0	.5								49.9
1899	42.8	2.0	27.5	.8								73.2
1900	49.1	3.2	32.6	1.5								86.4
1901	40.7	3.9	28.5	1.2								74.4
1902	39.6	3.9	31.7	1.2								76.4
1903	50.2	5.9	42.4	2.6								101.0
1904	51.1	6.6	41.1	9.3								108.1
1905	40.9	6.5	29.6	10.9								88.0
1906	44.3	7.6	24.2	16.4	11.5	3.4						107.6
1907	44.2	11.6	18.2	30.5	16.9	17.1						138.6
1908	44.4	18.6	15.3	30.3	11.7	23.6						144.0
1909	43.2	24.3	11.3	29.9	9.7	20.6						139.1
1910	35.8	28.4	8.8	36.7	9.1	20.5						139.3
1911	30.8	30.7	7.8	50.5	9.1	20.6	4.7					154.2
1912	42.8	31.4	7.0	71.8	7.8	25.4	7.1					193.4
1913	63.7	36.2	10.0	128.0	9.8	32.3	12.7					292.7
1914	45.2	38.1	9.1	124.7	10.9	26.5	14.5					269.2
1915	36.3	28.8	6.3	114.7	12.2	19.5	12.1	3.8				233.7
1916	58.0	42.6	9.4	258.2	20.1	30.5	15.8	9.6				444.2
1917	81.0	68.5	10.8	448.3	32.1	32.8	18.2	18.4				710.2
1918	101.6	94.3	11.3	623.0	50.7	32.6	29.8	30.1				973.5
1919	131.8	113.1		713.3	34.0	30.9	31.3	32.3				1087
1920	183.2	141.8		1355.8	92.1	41.2	139.3	83.6				2037
1921	101.4	160.7		399.6	52.4	21.5	52.2	41.7	185.0			1015
1922	93.7	137.2		565.0	55.8	20.2	55.5	60.6	148.3			1136
1923	94.0	191.9		495.4	56.6	17.0	35.8	84.7	186.7			1162
1924	97.7	217.9		506.4	56.3	14.8	30.6	85.7	195.0			1205
1925	99.9	261.8		634.2	65.3	15.9	36.4	98.9	281.2			1494
1926	101.7	274.3		734.5	80.3	18.0	44.5	117.0	337.4			1708
1927	93.2	207.2		697.7	80.8	12.2	30.7	66.6	270.4	80.0		1539
1928	101.6	182.0		839.2	67.9	12.1	21.5	58.9	138.3	52.1		1474
1929	128.2	255.1		998.0	85.8	12.6	21.2	53.1	185.8	41.4		1781
1930	63.3	216.4		762.4	90.2	11.2	22.3	46.6	173.2	32.7		1418
1931	43.3	107.8		452.6	44.9	5.5	9.0	23.5	60.1	13.7		760.3
1932	40.7	114.4		537.4	54.7	5.8	11.5	22.7	85.5	14.6		887.3
1933	39.6	113.2		501.5	62.1	4.5	7.7	13.9	56.4	9.3		808.3
1934	58.2	127.2		739.7	116.8	6.2	10.4	23.7	99.1	15.2		1196
1935	54.5	135.1		760.0	141.4	5.9	11.8	27.6	106.1	15.0		1257
1936	65.8	172.0		855.8	215.0	6.6	38.5	33.9	138.2	15.4		1541
1937	76.7	193.0		1043.1	290.7	11.6	45.9	42.4	207.2	21.5		1932
1938	51.4	204.0		843.2	292.1	32.7	45.5	39.3	181.6	31.9		1722
1939	56.6	181.5		716.1	274.9	107.8	32.6	39.9	158.0	31.7	47.1	1646
1940	61.8	172.2		723.6	289.3	168.8	32.3	44.4	183.0	40.9	49.6	1766
1941	68.1	190.0		830.5	335.8	189.6	40.1	55.4	200.9	46.2	56.8	2013
1942	83.5	202.9		844.4	350.0	160.4	45.6	61.8	198.4	49.8	48.2	2045
1943	77.1	236.7		872.0	472.9	125.1	44.1	71.0	236.4	51.6	59.4	2246
1944	77.0	262.2		996.6	584.5	119.7	37.6	73.5	284.6	58.3	60.4	2554
1945	80.3	274.6		1056.2	571.7	116.7	37.2	81.8	305.6	57.8	57.6	2640
1946	85.8	306.8		1216.3	655.6	136.0	58.9	110.8	364.1	67.5	68.0	3070
1947	92.3	454.4		1780.6	986.7	158.9	97.5	189.5	525.8	102.9	110.6	4499
1948	110.6	652.6		2651.7	1407.0	207.4	160.3	312.5	789.7	148.3	179.5	6619
1949	73.8	596.6		2304.6	1168.7	214.4	159.0	299.5	755.0	140.4	177.5	5890
1950	79.0	561.2		2627.9	1234.9	210.1	157.5	327.6	808.1	144.5	175.8	6327
1951	84.6	632.5		3145.2	1461.3	206.1	151.4	370.4	917.7	139.5	197.2	7306
1952	82.7	635.5		3209.8	1472.6	207.7	152.0	383.9	936.4	136.7	221.3	7439
1953	80.6	721.1		3376.2	1622.9	216.6	153.7	505.8	1034.3	145.7	282.9	8140
1954	56.7	719.5		3380.8	1524.6	242.4	167.4	614.8	1097.4	150.1	314.2	8268
1955	53.0	703.2		3586.7	1724.0	280.5	175.4	659.1	1182.5	145.1	347.1	8856
1956	63.0	728.9		3762.1	1788.6	286.8	192.6	739.0	1265.0	149.1	369.0	9344
1957	68.9	821.6		4055.0	2150.6	292.0	196.4	831.4	1272.4	171.2	432.7	10292

MP-4, WORKSHEET 2. PETROLEUM PRICE INDEX: Quantity Weights

(million barrels)

	Appalachian	California	Lima – Indiana	Mid-Continent	Gulf	Illinois	Northern Louisiana	Wyoming	All other Texas	Arkansas	New Mexico	Total
	A	B	C	D	E	F	G	H	I	J	K	L
1870	(5.3)											
1871	(5.2)											
1872	(6.3)											
1873	(9.9)											
1874	(10.9)											
1875	(8.8)											
1876	(9.1)	*										
1877	(13.3)	*										
1878	(15.4)	*										
1879	(19.9)	*										
1880	(26.2)	*										
1881	(27.6)	(.1)										
1882	(30.2)	(.1)										
1883	(23.3)	(.1)										
1884	(24.0)	(.3)										
1885	(21.5)	(.3)										
1886	(26.5)	(.4)	(1.1)									
1887	(22.9)	(.7)	(4.6)									
1888	(16.9)	(.7)	(9.7)									
1889	22.4	.3	(12.2)	(*)	(*)							22.7
1890	30.1	.3	(15.1)	(*)	(*)							30.4
1891	35.8	.3	(17.4)	(*)	(*)							36.2
1892	33.4	.4	15.9	(*)	(*)							49.7
1893	31.4	.5	16.0	(*)	(*)							47.8
1894	30.8	.7	17.3	(*)	(*)							48.8
1895	31.0	1.2	20.2	*	(*)							52.4
1896	34.0	1.2	25.3	.1	(*)							60.6
1897	35.2	1.9	22.8	.1	(*)							60.1
1898	31.7	2.3	20.3	.6	(*)							54.9
1899	33.1	2.6	20.2	.7	(*)							56.7
1900	36.3	4.3	21.8	.9	(0)							63.3
1901	33.6	8.8	21.9	1.0	(3.6)							65.3
1902	32.0	14.0	23.4	1.0	(18.0)							70.3
1903	31.6	24.4	24.1	1.6	(18.4)							81.6
1904	31.4	29.6	24.7	6.2	(24.6)							91.9
1905	29.4	33.4	22.3	12.5	(36.5)							97.6
1906	27.7	33.1	17.5	22.8	20.5	4.4						126.1
1907	25.3	39.7	13.1	46.9	16.4	24.3						165.7
1908	24.9	44.8	10.0	48.8	15.8	33.7						178.1
1909	26.5	55.5	8.2	50.8	10.9	30.9						182.8
1910	26.9	73.0	7.2	59.2	9.7	33.1						209.2
1911	23.7	81.1	6.2	66.6	11.0	31.3	7.0					227.0
1912	26.3	87.3	4.9	65.5	8.5	28.6	7.2					228.3
1913	25.9	97.8	4.8	84.9	8.5	23.9	9.8					255.6
1914	24.1	99.8	5.1	98.0	13.1	21.9	11.8					273.8
1915	22.9	86.6	4.3	123.3	20.6	19.0	15.1	4.4				296.2
1916	23.0	90.9	3.9	136.9	21.8	17.7	11.8	6.5				312.6
1917	24.9	93.9	3.7	163.5	24.3	15.8	8.6	9.2				343.9
1918	25.4	97.5	3.2	179.4	24.2	13.4	13.3	12.8				369.2
1919	31.8	101.2		193.1	23.4	12.0	14.9	13.4				389.7
1920	30.6	103.4		250.1	27.7	10.8	33.8	17.3				473.6
1921	30.4	112.6		134.1	36.4	10.0	25.2	20.9	88.7			458.4
1922	29.2	138.5		201.4	37.1	9.4	28.2	29.3	68.7			541.7
1923	28.2	262.9		191.7	33.3	8.7	18.6	47.6	101.5			692.6
1924	27.1	228.9		207.5	28.6	8.1	16.7	42.8	105.2			664.8
1925	27.6	232.5		206.3	33.1	7.9	17.4	34.5	123.2			682.5
1926	28.6	224.7		205.1	45.3	7.8	20.2	36.3	140.3			708.1
1927	30.4	231.2		310.0	52.0	7.0	17.8	29.2	179.2	40.0		896.9
1928	31.1	231.8		389.2	46.7	7.5	13.8	28.2	98.0	32.1		878.4
1929	33.8	292.5		431.3	57.1	7.3	13.0	25.5	113.9	24.9		999.3
1930	24.2	227.3		364.4	69.0	6.7	14.9	22.9	123.8	19.7		873.1
1931	21.9	188.8		413.7	55.2	5.9	10.8	19.2	90.6	14.8		821.0
1932	21.5	178.1		372.7	54.8	5.5	9.9	17.0	85.0	12.0		756.5
1933	21.2	172.0		479.5	78.8	5.0	10.2	14.4	83.6	11.7		876.4
1934	24.0	174.3		453.0	94.8	5.3	8.7	17.3	88.7	11.2		877.2
1935	25.5	207.8		465.4	114.7	5.1	9.7	19.9	98.2	11.0		957.4
1936	27.1	214.8		477.8	158.7	5.3	27.7	22.1	116.1	10.5		1060
1937	29.9	238.5		526.6	193.4	8.3	29.7	26.6	157.8	11.8		1223
1938	27.3	249.7		443.3	200.9	25.1	30.5	25.4	141.0	18.2		1161
1939	27.2	224.3		434.5	208.5	96.6	24.9	28.8	139.9	21.2	37.6	1244
1940	27.0	223.9		439.1	217.4	152.6	24.9	34.1	149.2	25.8	39.1	1333
1941	26.8	230.3		455.6	230.9	139.8	26.2	39.5	148.8	26.3	39.6	1364
1942	28.4	248.3		443.9	229.1	113.1	29.3	43.1	141.8	26.6	31.5	1335
1943	25.9	284.2		458.5	304.7	87.5	28.1	44.5	163.2	27.6	38.9	1463
1944	23.4	311.8		515.3	373.5	82.5	23.9	45.1	190.1	29.4	30.6	1635
1945	21.5	326.5		537.5	362.5	80.0	23.9	49.7	199.2	28.6	37.3	1667
1946	22.5	314.7		540.3	359.6	82.0	31.7	59.7	207.5	28.4	36.8	1683
1947	22.0	333.1		582.1	394.5	72.5	37.8	69.2	218.6	29.9	40.9	1801
1948	22.3	340.1		643.4	419.9	71.8	46.8	82.3	247.5	31.7	48.0	1954
1949	20.7	332.9		563.6	351.4	74.2	46.6	80.6	238.5	30.0	47.6	1786
1950	20.7	327.6		645.2	372.6	72.7	46.2	93.0	255.2	31.1	47.4	1912
1951	19.9	354.6		772.2	442.5	71.3	44.4	105.7	292.2	29.8	52.7	2185
1952	19.4	359.4		791.0	444.4	72.1	44.7	108.1	299.3	29.4	58.7	2227
1953	18.8	365.1		791.8	460.5	71.8	42.9	130.9	312.2	29.7	70.4	2294
1954	16.6	355.9		759.0	415.3	78.0	44.8	153.9	319.4	29.1	74.8	2247
1955	15.0	354.8		808.2	469.6	92.4	47.3	167.8	345.4	28.4	83.0	2412
1956	14.5	350.7		850.8	488.8	93.9	51.4	185.8	368.1	29.4	87.9	2521
1957	14.6	339.6		849.9	518.0	89.7	46.7	191.7	340.0	31.0	94.8	2516

MP-4, Worksheet 2, SOURCES

COLS. A-K, Quantity weights used in the calculation of aggregate values for each field, as given in Worksheet 1. Sources as follows:

COL. A

1870-1929. Appalachian field output. *Min. Resources 1918* Vol. II, p. 993, and *Petroleum Facts and Figures 1950*, p. 152.

1930-57. Sum of outputs in Pennsylvania, New York, West Virginia, and Ohio. *Petroleum Facts and Figures 1959*, p. 40-41.

COL. B, 1889-1957. California output. *Petroleum Facts and Figures 1959*, p. 40.

COL. C, 1892-1918. Lima (Ohio)-Indiana field. *Min. Resources 1918*, Vol. II, p. 1034.

COL. D

1895-1929. Mid-Continent field. *Min. Resources 1918*, Vol. II, p. 1053, and *Petroleum Facts and Figures 1950*, p. 152.

1930-57. Outputs of Kansas, Oklahoma, East Texas, and West Texas. *Petroleum Facts and Figures 1959*, pp. 40-41.

COL. E

1906-29. Gulf field. *Min. Resources 1918*, Vol. II, p. 1077, and *Petroleum Facts and Figures 1950*, p. 152.

1930-57. Texas Gulf plus Louisiana Gulf outputs. *Petroleum Facts and Figures 1959*, pp. 40-41.

COL. F, Illinois state output. *Petroleum Facts and Figures 1959*, p. 40.

COL. G, Northern Louisiana output

1911-21. *Min. Resources 1921*, Vol. II, p. 269.

1922-57. *Petroleum Facts and Figures 1959*, p. 30 (number of producing wells as of Dec. 31 times average daily production times 365).

COL. H, Wyoming, Colorado, and Montana outputs. *Petroleum Facts and Figures 1959*, pp. 40-41.

COL. I, All other Texas (other than Gulf, East Texas, and West Texas). *Petroleum Facts and Figures 1959*, pp. 30-31 (wells times daily output times 365).

COL. J, Arkansas state output. *Petroleum Facts and Figures 1959*, p. 40.

COL. K, New Mexico. *Petroleum Facts and Figures 1959*, p. 40.

COL. L, Sum of the above fields' outputs. This total runs between 95% and 101 % of the total U. S. output. The slight excess in some years is due to small overlaps in coverage between the regional fields and the states covered as states.

MP-4, Worksheet 2, NOTES

* Less than 50,000 barrels.

( ) Figures in parentheses were not used in computation of the index.

MP-5. PETROLEUM AND PETROLEUM PRODUCTS: Price

	BLS (1947-49 = 100)	BLS (1926 = 100)	Col. B / Col. A	Preferred series (1926 = 100)
	A	B	C	D
1913		73.3		73.3
1914		65.8		65.8
1915		54.1		54.1
1916		87.3		87.3
1917		112		112
1918		135		135
1919		128		128
1920		184		184
1921		104		104
1922		103		103
1923		82.6		82.6
1924		83.5		83.5
1925		95.0		95.0
1926	98.1	100	1.02	100
1927	71.3	72.7	1.02	72.7
1928	70.6	72.0	1.02	72.0
1929	69.9	71.3	1.02	71.3
1930	60.4	61.5	1.02	61.5
1931	38.7	39.5	1.02	39.5
1932	44.5	45.4	1.02	45.4
1933	40.2	41.0	1.02	41.0
1934	49.5			50.5
1935	50.3			51.3
1936	56.2			57.3
1937	59.3			60.5
1938	54.9			56.0
1939	51.2			52.2
1940	49.0			50.0
1941	55.9			57.0
1942	58.7			59.9
1943	61.3			62.5
1944	62.6			63.9
1945	62.3			63.5
1946	66.2			67.5
1947	88.2			90.0
1948	112			114
1949	100			102
1950	104			106
1951	110			113
1952	109			112
1953	113			115
1954	111			113
1955	113			115
1956	118			120
1957	127			130

MP-5, SOURCES

COL. A, BLS mimeographed summary from *Wholesale Prices* Bulletins, "Petroleum and products."

COL.B, U.S. Department of Commerce, *Survey of Current Business*, 1938 Supplement, p. 13, "Petroleum products" (source, BLS).

COL. C, Ratio, Col. B/Col. A.

COL. D, Preferred series

1913-33. Col. B, transcribed.

1934-57. Col. A times ratio in Col. C (1.020).

MP-5, NOTES

The components of the index in 1926 and 1954 are shown below:

Components	*Relative importance in*	
	1926	*1954*
Crude petroleum	40%	15%
Fuel oil, refinery	18	
Distillate fuels		17
Residual fuels		10
Gasoline, refinery	32	48
Natural gasoline	3	1
Kerosene	7	4
Lubricating oils		4
	100%	100%

MP-6. NATURAL GAS: Price

MP-6, SOURCES

Col. A, Price at point of consumption.
- 1906-54. *Hist. Stat. 1949*, series G-61 (source, Bureau of Mines), and *Statistical Abstracts*, "Average unit value at point of consumption."
- 1955. *Min. Yearbook 1956*, Vol. II, p. 298.
- 1956-57. *Min. Yearbook 1957*, Vol. II, p. 321.

Col. B, Ratio, Col. I/Col. A.

Col. C, BLS *Wholesale Prices* Bulls.

Col. D, BLS *Wholesale Prices* Bulls. Average value of sales by pipelines and utilities to industrial consumers (1947-49 = 100).

Col. E, BLS *Wholesale Prices* Bulls., manufactured and natural gas combined (price at point of delivery) (1926 = 100).

Col. F
- 1926-46. Col. E linked to Col. D at 1947-48 (ratio, 1.136).
- 1947-55. Col. D, transcribed.

Col. G, Ratio, Col. F/Col. A.

Col. H, Ratio, Col. F/Col. I.

Col. I, Preferred series, average value, point of production
- 1919-21. Barger & Schurr, p. 285, value at the well, estimated "on the basis of its relation to value at the point of consumption in 1922."
- 1922-31. *Mineral Resources*, average value at wells.
- 1932-57. *Minerals Yearbooks*, average unit value at point of production.

MP-6, NOTES

[a] Manufactured and natural, combined.
[b] Average of monthly prices.
[c] Dollars per dekatherm.

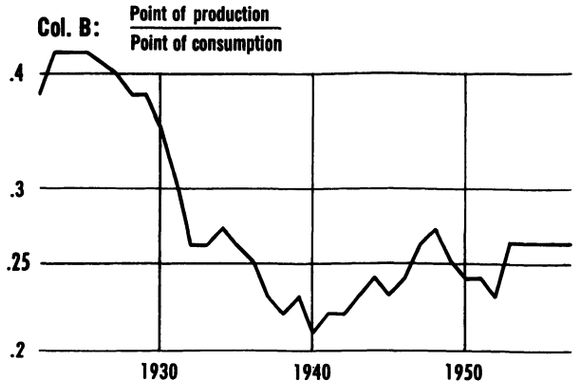
Prior to 1922 the only series available is for value at point of consumption.

In view of the lack of correspondence of relative movements of the two Bureau of Mines series (see Col. B chart) it is not advisable to splice them.

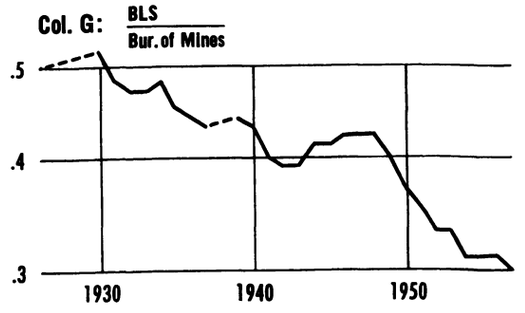
	Bu. of Mines & Stat. Ab., point of consumption (¢ per 1000 cu. ft.)	Col. I / Col. A	BLS, prices of nat. gas ($ per 1000 cu. ft.)	BLS, index, nat. gas (1947-49 = 100)	BLS, nat. & mfd. gas (1926 = 100)	Col. E linked to Col. D (1947-49 = 100)	Col. F / Col. A	Col. F / Col. I	Preferred series, Bu. of Mines, point of production (¢ per 1000 cu. ft.)
	A	B	C	D	E	F	G	H	I
1906	12.1								
1907	13.3								
1908	13.6								
1909	13.1								
1910	13.9								
1911	14.5								
1912	15.0								
1913	15.1								
1914	15.9								
1915	16.1								
1916	16.0								
1917	17.9								
1918	21.3								
1919	21.6	.38							8.3
1920	24.6	.38							9.4
1921	26.4	.38							10.1
1922	29.1	.38							11.1
1923	23.8	.42							10.0
1924	22.2	.42							9.3
1925	22.3	.42							9.4
1926	22.9	.41			100	113.6	5.0	12.0	9.5
1927	22.0	.40							8.8
1928	23.2	.38							8.9
1929	21.6	.38							8.2
1930	21.4	.35	.510		97.3	110.5	5.2	14.5	7.6
1931	23.3	.30	[a].685		98.7	112.1	4.8	16.0	7.0
1932	24.7	.26	[b].724		b102.2	116.1	4.7	18.1	6.4
1933	23.7	.26	[b].696		b98.4	111.8	4.7	18.0	6.2
1934	22.3	.27	[b].667		b94.2	107.0	4.8	17.8	6.0
1935	22.4	.26	[a].632		89.3	101.4	4.5	17.5	5.8
1936	22.0	.25	[a].603		85.2	96.8	4.4	17.6	5.5
1937	21.9	.23	[b].588		82.4	93.6	4.3	18.4	5.1
1938	21.8	.22							4.9
1939	21.6	.23	[a].595		84.1	95.5	4.4	19.5	4.9
1940	21.7	.21	[b].588		82.0	93.2	4.3	20.7	4.5
1941	22.1	.22	[a].556		78.6	89.3	4.0	18.2	4.9
1942	22.7	.22	[a].555		78.4	89.1	3.9	17.5	5.1
1943	22.3	.23	[a].541		76.5	86.9	3.9	16.7	5.2
1944	21.5	.24	[a].545		77.2	87.7	4.1	17.2	5.1
1945	21.4	.23	[a].550		77.9	88.5	4.1	18.1	4.9
1946	22.0	.24	[c].172		80.7	91.7	4.2	17.3	5.3
1947	23.2	.26	[c].181	97.1	85.0	97.1	4.2	16.2	6.0
1948	24.1	.27	[c].188	100.9	89.2	100.9	4.2	15.5	6.5
1949	25.4	.25		102.1		102.1	4.0	16.2	6.3
1950	26.6	.24		99.1		99.1	3.7	15.2	6.5
1951	29.8	.24		103.7		103.7	3.5	14.2	7.3
1952	33.2	.23		108.6		108.6	3.3	13.9	7.8
1953	35.5	.26		115.9		115.9	3.3	12.6	9.2
1954	38.1	.26		117.7		117.7	3.1	11.6	10.1
1955	40.0	.26		123.8		123.8	3.1	11.9	10.4
1956	41.5	.26		127.7		127.7	3.1	11.8	10.8
1957	43.1	.26		129.2		129.2	3.1	11.4	11.3

MP-6, NOTES (continued)

The BLS chained series (Col. F) is not consistent throughout, as it includes manufactured as well as natural gas from 1926 to 1947; this might account for part of the fall relative to the Bureau of Mines point-of-consumption series (Col. A) —see Col. G chart. However, there is a considerable fall in



the ratio (see chart) after 1947. This is probably due to the fact that average value (reported by the Bureau of Mines) rises in part because gas is delivered at progressively more distant points; the BLS series probably underwent less "quality" rise, as it covered industrial users only, which are concentrated near the gas fields.



MP-7. NATURAL GASOLINE: Price

MP-7, SOURCES

Col. A, BLS *Wholesale Prices* Bulls., "Average wholesale prices, gasoline, natural, grade B, Texas."

Col. B, Preferred series

1911-51. *Hist. Stat. 1949*, series G-64 (from Bureau of Mines).

1952-56. *Stat. Abstract 1955*, Table 920; *1956*, Table 918; *1957*, Table 938; *1958*, Table 948 (from Bureau of Mines).

1957. *Min. Yearbook 1957*, Vol. II, p. 328. Sum of natural gasoline, finished gasoline and naphtha, and other products, value divided by quantity.

MP-7, NOTES

[a] Oklahoma.

The data refer to the average unit value of natural gasoline and cycle products, *excluding liquid petroleum gases*, at the plant. The recent *Statistical Abstracts* do not continue the *Historical Statistics* series but do give the quantity and value data from which the average unit values may be derived.

	BLS, wholesale prices, Texas (cents per gallon)	Preferred series (cents per gallon)
	A	B
1911		7.2
1912		9.6
1913		10.2
1914		7.3
1915		7.9
1916		13.8
1917		18.4
1918		17.8
1919		18.3
1920		18.7
1921	[a]14.9	13.7
1922	[a]15.9	14.4
1923	[a]8.8	9.5
1924	8.1	8.8
1925	11.6	10.7
1926	9.0	10.0
1927	5.3	7.2
1928	6.9	7.7
1929	[a]6.4	7.1
1930	[a]5.0	5.8
1931	[a]2.9	3.5
1932	[a]2.2	3.2
1933	[a]2.9	3.8
1934	[a]2.6	3.9
1935	[a]3.3	4.3
1936	[a]3.6	4.7
1937	[a]3.7	4.7
1938	[a]2.7	4.0
1939	[a]3.2	4.2
1940	[a]1.9	2.9
1941	[a]3.7	3.9
1942	[a]3.2	3.8
1943	[a]4.1	4.4
1944	[a]4.8	4.9
1945	[a]4.6	4.4
1946	[a]3.8	4.2
1947	5.5	6.2
1948	8.0	8.6
1949	5.4	7.3
1950	5.0	7.0
1951	5.7	7.4
1952	5.7	7.3
1953	5.3	7.6
1954	4.4	7.5
1955	4.6	7.2
1956	4.3	7.4
1957	3.8	7.3

MP-8. BITUMINOUS COAL: Price

	Seward (Stat. Abst.) ($ per long ton)	Bu. Mines, av. value at mine ($ per long ton)	Census, value/net prod.	Col. C / Col. I	BLS, index (1947-49 = 100)	Coal Age, spot prices ($ per ton)	BLS, Cincinnati series, linked (1913 = 100)	Col. B / Col. A	Preferred series, av. value at mine ($ per long ton)
	A	B	C	D	E	F	G	H	I
1870	4.72		1.82	(.893)					2.04
1871	4.72								2.01
1872	4.66								1.96
1873	4.84								2.01
1874	4.50								1.84
1875	4.35								1.75
1876	3.87								1.54
1877	3.15								1.23
1878	2.86								1.10
1879	2.79								1.06
1880	3.75	1.40	1.25	.893				.373	1.40
1881	3.75	1.25						.333	1.25
1882	3.50	1.25						.357	1.25
1883	2.90	1.20						.414	1.20
1884	2.50	1.05						.420	1.05
1885	2.25	1.27						.564	1.27
1886	2.10	1.18						.562	1.18
1887	3.45	1.24						.359	1.24
1888	[a]2.60	1.12						.431	1.12
1889	[a]2.60	1.11	.988	.890				.427	1.11
1890	[a]2.60	1.11					57.2	.427	1.11
1891	[a]2.60	1.11					63.0	.427	1.11
1892	[a]2.50	1.10					59.7	.440	1.10
1893	[a]2.40	1.07					61.0	.446	1.07
1894	[a]2.25	1.02					54.4	.449	1.02
1895	[a]2.00	.96					51.4	.480	.96
1896	[a]2.28	.93					59.7	.408	.93
1897	[a]1.80	.91					55.2	.506	.91
1898	[a]1.60	.90					60.5	.562	.90
1899	[a]2.00	.97					67.1	.485	.97
1900	2.50	1.16					79.6	.464	1.16
1901	2.50	1.18					88.7	.472	1.18
1902	2.50	1.25	1.12	.896			141	.500	1.25
1903	3.35	1.39					159	.415	1.39
1904	2.25	1.23					116	.547	1.23
1905	2.60	1.19					106	.458	1.19
1906	2.75	1.24				1.21	103	.451	1.24
1907	2.80	1.28				1.18	102	.457	1.28
1908	2.70	1.25				1.05	95.6	.463	1.25
1909	2.75	1.20	1.07	.892		1.04	91.4	.436	1.20
1910	2.75	1.25				1.23	93.4	.455	1.25
1911	2.75	1.24				1.07	95.9	.451	1.24
1912	2.75	1.29				1.21	97.0	.469	1.29
1913	2.95	1.32			[b]20.3	1.23	100	.447	1.32
1914	3.00	1.31			[b]18.5	1.14	99.5	.437	1.31
1915	3.00	1.27			[b]18.1	1.12	102	.423	1.27
1916	3.00	1.48			[b]29.6	1.85	127	.493	1.48
1917		2.53			[b]52.4	3.25	215		2.53
1918		2.89			[b]43.4	2.58	170		2.89
1919		2.79	2.49	.892	[b]42.5	2.59	188		2.79
1920		4.20			[b]88.2	5.64	261		4.20
1921		3.24			[b]41.4	2.55	228		3.24
1922		3.38			[b]60.3	3.64	233		3.38
1923		3.00			[b]60.4	2.77	237		3.00
1924		2.46			[b]53.1	2.08	171		2.46
1925		2.28			[b]51.4	2.06	170		2.28
1926		2.31			53.3	2.21	183		2.31
1927		2.23			53.5	1.99	178		2.23
1928		2.08			49.9	1.80	168		2.08
1929		1.99	1.80	.905	48.7	1.79			1.99
1930		1.90			47.7	1.75			1.90
1931		1.72			45.1				1.72
1932		1.47			43.7				1.47
1933		1.50			44.1				1.50
1934		1.96			50.4				1.96
1935		1.98	1.77	.894	51.6				1.98
1936		1.97			51.9				1.97
1937		2.17			52.6				2.17
1938		2.18			52.8				2.18
1939		2.06	1.84	.893	52.0				2.06
1940		2.14			52.0				2.14
1941		2.45			55.6				2.45
1942		2.64			58.5				2.64
1943		3.01			61.9				3.01
1944		3.27			64.1				3.27
1945		3.43			65.6				3.43
1946		3.85			70.6				3.85
1947		4.66			87.4				4.66
1948		5.59			107				5.59
1949		5.47			106				5.47
1950		5.42			106				5.42
1951		5.51			106				5.51
1952		5.49			106				5.49
1953		5.51			108				5.51
1954		5.05	4.56	.903	102				5.05
1955		5.03			102				5.03
1956		5.40			113				5.40
1957		5.69			122				5.69

MP-8, SOURCES

COL. A, *Stat. Abstract 1916*, Table 305, bituminous (Cumberland) coal at Baltimore (Seward's Coal Trade Journal).

COL. B

1880-1896. *Min. Resources 1897-98*, Part VI, p. 294, value divided by production in long tons.

1897-1955. *Hist. Stat. 1949*, series G-15, and *Statistical Abstract*, average value per long ton (converted from short tons) (source, Bureau of Mines).

1956-1957. *Min. Yearbook 1957*, Vol. II, p. 125 (converted from short tons).

COL. C, *1954 Census of Mineral Industries*, p. 12A-4, value of coal net shipments divided by net production of coal.

COL. D, Ratio, Col. C/Col. I.

COL. E

1913-25. BLS *Wholesale Prices* Bull. No. 493 (1913-28), p. 13.

1926-55. BLS mimeo, series 05-12, "Wholesale price, bituminous coal."

1956-57. BLS *Wholesale Prices* Bulls., series 05-12.

COL. F, *Coal Age* spot prices, as given in *Min. Resources 1930*, Part II, p. 649.

COL. G, BLS *Wholesale Prices* Bulls.: No. 320 (1890-1921), index (1913 = 100), which links (at 1913) "Georges Creek" series to "New River: f.o.b. Cincinnati" series (p. 160); and No. 493 (1913-28), "New River: f.o.b. Cincinnati" series (1926 = 100), p. 134, linked to the 1890-1921 series at 1921 (the overlap shows identical movements).

COL. H, Ratio, Col. B/Col. A.

COL. I, Preferred series, average value at mine

1870. Col. B extrapolated by the Census series (Col. C).

1871-79. Interpolated between the 1870 and 1880 figures by means of the series in Col. A (Seward's Coal Trade Journal).

1880-1957. Col. B, transcribed.

MP-8, NOTES

[a] Apparently a price fixed by a pool or association, 1888-99. Prices for other years also appear to deviate from what could be expected of true open market prices.

[b] Dubious series. See below.

Col. A. The Seward's price series is not wholly satisfactory, as indicated by the irregularity of the relationship to our preferred series, as shown in the Col. H chart, but it seems to be the best available interpolation between the *1870 Census* figure and the Bureau of Mines series, which goes back only to 1880. Col. D shows a very regular relationship between Census and the Bureau of Mines, however, so that we are fairly sure of our 1870 figure.

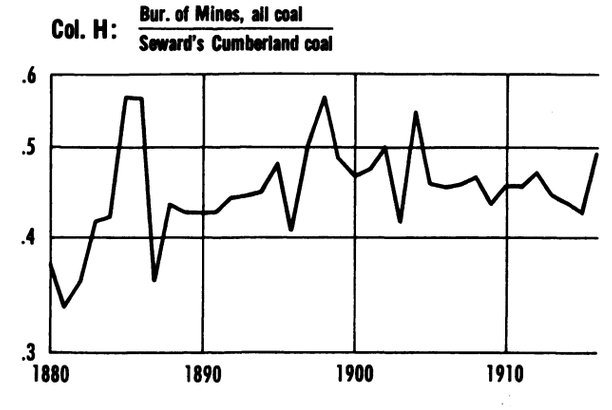
Col. E. The BLS series shows inconsistencies with our preferred series:

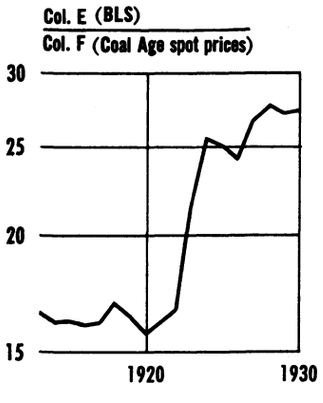
1913-26. This portion of the BLS series shows more rise than any other series; the charts illustrating the ratios of Col. E to Cols. F, G, and I show the results of a rise amounting to almost 100% more than the Bureau of Mines series, the *Coal Age* spot prices, or the BLS's own spliced series, which were used by splicing to make the BLS index; while the latter three series are reasonably consistent with each other and with the Census data. The BLS index follows the "spot price" index almost exactly for 1913-22 (see the Col. E/Col. F chart), but then appears to have been spliced to a more stable series, just when spot prices were at heights induced by the great strike of 1922. The result is a showing of an excessive long-term rise, and the BLS series must be regarded as an invalid indicator for 1913-26.

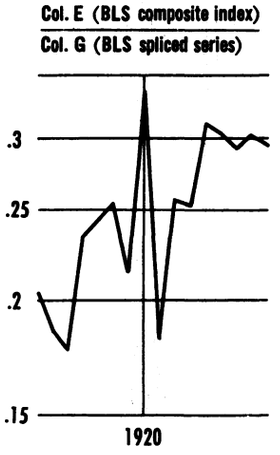
1926-51. Here the BLS series appears to be a reasonably consistent delivered-price series, based on quotations at some principal consuming or shipping center, like Chicago, New York, or Cincinnati. The deviation from the Bureau of Mines series is readily explained in terms of the difference between an f.o.b. and a delivered-price series: the lag in adjustment of rail rates causes less drop during the depression, less rise during the World War II inflation.

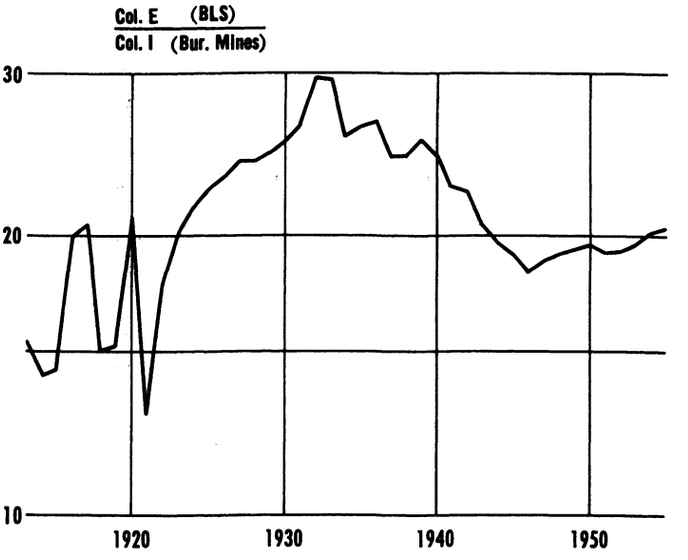
1952-57. The BLS series was changed to an f.o.b. basis in 1952.

Ratios between the principal series are given in the accompanying charts.









MP-9. ANTHRACITE: Price

	BLS, price index (1926 = 100)	Col. A / Col. D	Census, value/net prod.	Preferred series, Bu. of Mines ($ per ton)
	A	B	C	D
1870			2.19	2.19
1880			1.48	1.47
1881				2.01
1882				2.01
1883				2.01
1884				1.79
1885				2.00
1886				1.95
1887				2.01
1888				1.91
1889			1.44	1.44
1890	29.2	20.4		1.43
1891	30.1	20.6		1.46
1892	34.4	21.9		1.57
1893	36.3	22.8		1.59
1894	30.9	20.5		1.51
1895	26.0	18.4		1.41
1896	31.0	20.7		1.50
1897	32.5	21.5		1.51
1898	31.0	22.0		1.41
1899	31.8	21.8		1.46
1900	34.1	22.9		1.49
1901	37.7	22.6		1.67
1902	38.8	21.1	1.84	1.84
1903	42.0	20.6		2.04
1904	42.0	22.1		1.90
1905	42.0	22.9		1.83
1906	42.4	22.9		1.85
1907	42.0	22.0		1.91
1908	42.0	22.1		1.90
1909	42.0	22.8	1.84	1.84
1910	41.9	22.1		1.90
1911	43.6	22.5		1.94
1912	46.0	21.8		2.11
1913	46.3	21.7		2.13
1914	46.3	22.4		2.07
1915	46.4	22.4		2.07
1916	48.5	21.0		2.31
1917	51.7	18.1		2.85
1918	59.8	17.6		3.40
1919	72.0	17.4	4.12	4.14
1920	82.8	17.1		4.85
1921	91.7	18.3		5.00
1922	92.3	18.4		5.01
1923	94.8	17.5		5.43
1924	99.0	18.2		5.43
1925	97.5	18.4		5.30
1926	100.0	17.8		5.62
1927	96.4	18.3		5.26
1928	91.7	17.6		5.22
1929	90.2	17.3	5.16	5.22
1930	89.1	17.4		5.11
1931	91.1	18.3		4.97
1932	88.4	19.8		4.46
1933	82.3	19.7		4.17
1934	80.1	18.8		4.27
1935	79.8	19.8	4.02	4.03
1936	80.6	19.4		4.16
1937	77.8	20.4		3.81
1938	78.0	19.9		3.92
1939	75.8	20.8	3.65	3.64
1940	78.9	19.8		3.99
1941	82.8	19.4		4.26
1942	85.5	19.0		4.50
1943	90.4	17.9		5.06
1944	95.7	17.2		5.57
1945	99.1	16.8		5.90
1946	109.1	16.0		6.83
1947	118.0	16.3		7.22
1948	132.5	16.2		8.17
1949	137.6	16.4		8.38
1950	143.1	16.1		8.90
1951	159.1	16.7		9.51
1952	161.5	17.3		9.36
1953	179.3	18.5		9.67
1954	166.4	19.5	8.42	8.52
1955	156.3	19.9		7.86
1956	160.2	19.6		8.19
1957	177.1	19.7		8.99

MP-9, SOURCES

COL. A

1890-1912. BLS *Wholesale Prices* Bull. 320, 1890-1921, index for "anthracite, New York tidewater, average price per long ton" (linked to 1913-26 series: ratio, .4629).

1913-26. BLS *Wholesale Prices* Bull. 493, 1913-1928, same description; 1926 = 100.

1927-55. BLS mimeo, "Pennsylvania anthracite" (1947-49 = 100, linked to 1913-26 series at 1926: ratio, 1.2937).

1956-57. BLS *Wholesale Prices* Bulls. 1214 and 1235.

COL. B, Ratio, Col. A/Col. D.

COL. C, *1954 Census of Mineral Industries*, pp. 11B-4 and 11B-5, value of coal net shipments divided by net production of anthracite.

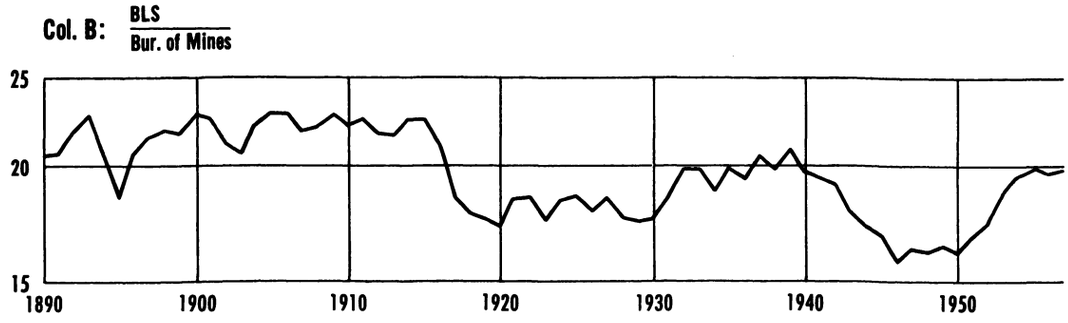
COL. D, Preferred series

1870. Col. C.

1880-1956. *Hist. Stat. 1960*, series M-121, average unit value (source, Bureau of Mines).

1957. *Stat. Abstract 1960*, p. 728.

MP-9, NOTES



MP-10. METALS: Price

	Iron	Copper	Lead	Zinc	Bauxite	Ferroalloys	All metals ($ mil.)		
	(million dollars, 1954 output weights)						1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I
1870	275.7	256.7	33.9	39.3			202	720	743
1871	291.7	280.1	33.4	39.3			215	764	791
1872	405.7	425.0	34.5	39.3			302	1063	1110
1873	354.8	367.1	34.5	48.3			268	949	987
1874	251.1	314.6	32.8	39.3			211	757	783
1875	211.6	295.3	31.8	41.6			191	690	712
1876	184.9	253.9	33.4	40.4			169	614	629
1877	156.6	245.6	30.1	33.1			153	557	571
1878	146.3	207.0	19.1	25.3			131	472	489
1879	178.2	207.0	22.4	25.3			144	514	531
1880	236.7	244.3	27.4	30.9			180	639	662
1881	208.5	212.5	26.3	29.4			159	566	585
1882	213.6	234.6	26.8	29.9			168	599	620
1883	185.9	196.0	23.5	25.3			144	512	528
1884	164.8	179.4	20.3	24.9			129	462	478
1885	149.4	143.5	21.4	24.4			113	405	416
1886	155.1	130.1	25.2	24.7			112	403	411
1887	173.6	128.6	24.6	25.9			118	423	433
1888	156.6	212.5	24.1	27.6			139	501	516
1889	147.4	186.3	21.4	28.2	6.5		127	456	470
1890	155.1	209.8	24.6	31.2	6.5		139	501	515
1891	144.8	173.9	23.5	28.2	6.5		122	443	454
1892	129.9	153.2	22.4	26.0	6.5		110	398	408
1893	119.1	144.9	20.3	22.9	6.4		102	368	378
1894	104.2	126.0	18.1	19.8	6.5		88.8	322	331
1895	109.4	143.5	17.5	20.4	5.2		96.2	347	357
1896	107.3	146.3	16.4	22.1	5.2		96.2	348	359
1897	98.6	150.4	19.7	23.1	5.6		95.9	350	358
1898	96.0	158.7	20.8	25.7	6.0		98.7	362	370
1899	161.8	234.6	24.6	32.3	7.1		149	539	555
1900	166.9	220.8	24.1	24.7	7.8		145	519	536
1901	133.0	224.9	24.1	22.9	8.5		134	483	498
1902	184.3	160.1	22.4	27.5	8.9		132	470	486
1903	165.9	182.2	23.5	31.6	7.2		133	480	495
1904	127.9	173.9	23.5	29.0	10.0		117	425	439
1905	147.9	209.8	25.7	33.7	10.0		137	499	515
1906	174.1	266.3	31.2	35.2	9.8		168	606	623
1907	199.2	276.0	29.0	34.8	9.9		179	641	662
1908	147.4	182.2	23.0	26.6	10.2		126	453	469
1909	148.4	179.4	23.5	31.0	10.6		126	457	474
1910	145.3	175.3	24.6	31.8	9.7		124	452	466
1911	131.5	171.1	24.6	33.2	9.7		118	433	446
1912	137.6	224.9	24.6	39.9	9.7		139	510	526
1913	143.3	211.1	24.1	32.6	9.5		135	491	507
1914	125.3	187.7	21.4	29.8	9.8	76.8	119	435	451
1915	133.5	237.4	25.7	80.9	10.3	74.3	151	571	562
1916	193.1	375.4	37.2	77.5	10.9	113	220	817	807
1917	376.9	375.4	47.6	51.2	11.0	136	285	1018	999
1918	316.3	339.5	41.1	46.7	11.4	142	247	891	898
1919	269.6	258.1	31.8	41.5	11.8	104	200	715	717
1920	406.7	241.5	44.3	45.7	12.5	56.4	249	877	807
1921	212.1	172.5	24.6	28.9	12.8	28.0	147	519	480
1922	235.7	184.9	31.2	34.2	13.1	34.9	163	577	535
1923	250.6	198.7	39.4	39.4	12.1	52.2	177	633	592
1924	197.2	179.4	44.3	37.6	12.4	64.0	154	560	537
1925	190.5	193.2	49.3	45.0	12.6	74.2	159	586	564
1926	181.3	190.4	46.0	43.4	12.4	72.3	153	564	546
1927	172.5	178.0	36.7	37.1	12.5	71.9	141	516	509
1928	162.3	201.5	34.5	35.8	12.2	57.2	144	525	503
1929	176.1	249.8	37.2	38.4	12.4	58.5	166	603	572
1930	174.1	179.4	30.1	27.6	11.7	56.2	137	494	479
1931	154.6	112.1	23.0	22.4	11.7	49.7	105	377	374
1932	137.1	76.7	17.5	18.3	11.4	47.4	84.3	301	308
1933	148.9	96.9	21.4	24.7	12.0	63.9	98.0	354	366
1934	171.5	116.3	21.4	25.3	14.4	65.1	112	402	414
1935	176.6	119.4	22.4	26.4	13.4	62.3	116	415	420
1936	184.3	130.7	25.7	29.7	11.9	62.4	124	446	445
1937	221.3	182.2	32.8	38.6	11.7	68.6	159	570	555
1938	208.5	138.0	25.7	28.0	11.7	68.9	135	480	481
1939	203.3	151.8	27.4	30.9	11.6	66.8	139	496	492
1940	216.7	155.9	28.5	37.8	11.9	70.9	147	527	522
1941	225.9	162.8	31.8	44.2	11.9	75.5	155	560	552
1942	226.5	162.8	35.6	48.6	11.9	80.3	158	572	564
1943	226.5	162.8	35.6	48.6	11.7	82.2	158	572	567
1944	226.5	162.8	35.6	48.6	12.0	81.6	157	572	567
1945	236.2	162.8	35.6	48.6	12.5	81.7	161	584	577
1946	261.9	190.4	44.3	51.4	14.2	75.7	183	663	639
1947	325.0	289.8	80.5	61.8	13.4	78.4	253	924	849
1948	401.6	303.6	98.6	79.7	13.7	81.9	296	1080	979
1949	442.1	265.0	84.3	72.4	13.7	93.1	291	1049	971
1950	452.4	292.6	72.8	82.0	13.5	98.1	301	1081	1011
1951	499.6	334.0	95.8	105.6	15.6	138	346	1254	1189
1952	509.4	334.0	90.3	95.5	14.2	143	345	1244	1185
1953	534.0	397.4	73.9	64.6	16.4	142	361	1279	1228
1954	539.2	409.9	76.6	62.9	16.0	141	368	1302	1246
1955	549.4	517.5	82.7	71.9	15.8	142	410	1457	1379
1956	585.4	576.8	87.6	78.6	16.7	146	445	1583	1490
1957	621.3	408.5	80.5	66.8	17.0	127	398	1406	1321

MP-10, SOURCES

1954 Output Weights:

COL. A, Iron (pig). Table MP-12, Col. E, times 5.135 mil. units (1954: value of output divided by price index).

COL. B, Copper. Table MP-19, Col. G, times 1380 mil. lb. (1954: value of output divided by price).

COL. C, Lead. Table MP-20, Col. B, times 547.5 mil. lb. (1954: value of output divided by price).

COL. D, Zinc. Table MP-21, Col. B, times 561.6 mil. lb. (1954: value of output divided by price).

COL. E, Bauxite. Table MP-22, Col. C, times 2.01 mil. long tons (1954: value of output divided by price).

COL. F, Ferroalloys. Table MP-14, Col. G, transcribed.

COLS. G and H, Price indicators, all metals, 1902 and 1929 outputs. Computed exactly as Col. I, except that 1902 and 1929 outputs were used as weights in the computation. (For weights, see notes, below.)

COL. I, Price indicator, all metals, 1954 outputs. Sum, Cols. A through F, linked for missing series.

MP-10, NOTES

We have used pig metal prices (except for aluminum) as the best available indicators of scarcity, but have weighted these prices by value of output of ores (as given by the *1954 Census of Mineral Industries*), to measure the relative importance of the various metal mining industries. The resulting quantity figures are not real, but are merely "equivalents" resulting from the division of value by price. Precious metals have been omitted because their prices reflect government policy rather than scarcity of resources.

Cols. G and H. The weights used in the computation of the 1902- and 1929-weighted price indicators are as follows:

	Commodity	*1902 output weights*	*1929 output weights*
A	Iron	1.82 mil. units	5.75 mil. units
B	Copper	441 mil. lb.	1566 mil. lb.
C	Lead	215 mil. lb.	994 mil. lb.
D	Zinc	118.4 mil. lb.	656 mil. lb.
E	Bauxite	.0295 mil. long tons	.355 mil. long tons
F	Ferroalloys	(Table MP-14)	(Table MP-14)

MP-11. IRON (ORE): Price

MP-11, SOURCES

COL. A, *Hist. Stat. 1960,* series L-198.

COL. B, Preferred series. *Metal Stat. 1955,* p. 37, and *1958,* p. 33, dollars per long ton for "Mesabi; non-Bessemer iron ore at Lake Erie docks."

	Average value per ton at mines	Preferred series, Metal Stat. (dollars per long ton)
	A	B
1895		1.90
1900		4.00
1905		3.00
1910		4.00
1912	1.88	2.85
1913	2.19	3.40
1914	1.81	2.85
1915	1.83	2.80
1916	2.34	3.55
1917	3.15	5.05
1918	3.39	5.75
1919	3.50	5.55
1920	4.11	6.55
1921	3.37	5.55
1922	3.12	5.05
1923	3.45	5.55
1924	2.91	4.75
1925	2.52	4.25
1926	2.51	4.25
1927	2.47	4.25
1928	2.46	4.25
1929	2.61	4.50
1930	2.64	4.50
1931	2.60	4.50
1932	2.42	4.50
1933	2.59	4.50
1934	2.58	4.50
1935	2.48	4.50
1936	2.56	4.50
1937	2.87	4.95
1938	2.81	4.95
1939	2.89	4.95
1940	2.51	4.45
1941	2.68	4.45
1942	2.63	4.45
1943	2.70	4.45
1944	2.70	4.45
1945	2.77	4.55
1946	3.07	4.55
1947	3.44	5.55
1948	3.91	6.20
1949	4.50	7.20
1950	4.99	7.70
1951	5.46	8.30
1952	6.09	8.30
1953	6.76	9.90
1954	6.99	9.90
1955	7.12	10.10
1956	7.73	10.85
1957	8.33	11.45

MP-12. IRON (PIG): Price

	American Iron & Steel Assn. (dollars per ton)	Col. E / Col. A	Metal Stat. (dollars per ton)	Col. C / Col. E	Preferred series, price index (1951-53 = 100)
	A	B	C	D	E
1870	33.2				53.7
1871	35.1				56.8
1872	48.9				79.0
1873	42.8				69.1
1874	30.2				48.9
1875	25.5				41.2
1876	22.2				36.0
1877	18.9				30.5
1878	17.6				28.5
1879	21.5				34.7
1880	28.5				46.1
1881	25.1				40.6
1882	25.8				41.6
1883	22.4				36.2
1884	19.9				32.1
1885	18.0				29.1
1886	18.7				30.2
1887	20.9				33.8
1888	18.9				30.5
1889	17.8				28.7
1890	18.4	1.64	17.0	.564	30.2
1891	17.5	1.61	14.8	.526	28.2
1892	15.8	1.61	13.5	.532	25.3
1893	14.5	1.60	12.2	.525	23.2
1894	12.7	1.61	10.4	.511	20.3
1895	13.1	1.62	11.7	.551	21.3
1896	13.0	1.62	11.1	.532	20.9
1897	12.1	1.59	9.98	.519	19.2
1898	11.7	1.60	10.4	.558	18.7
1899	19.4	1.63	17.3	.550	31.5
1900	20.0	1.63	17.8	.548	32.5
1901	15.9	1.63	14.4	.554	25.9
1902			19.9	.555	35.9
1903			17.8	.550	32.3
1904			13.3	.535	24.9
1905			16.0	.554	28.8
1906			18.8	.556	33.9
1907			22.5	.580	38.8
1908			16.0	.558	28.7
1909			16.2	.561	28.9
1910			15.6	.550	28.3
1911			14.0	.546	25.6
1912			14.8	.552	26.8
1913			15.4	.553	27.9
1914			13.5	.555	24.4
1915			14.2	.545	26.0
1916			20.3	.540	37.6
1917			40.0	.545	73.4
1918			34.4	.559	61.6
1919			29.9	.570	52.5
1920			43.8	.553	79.2
1921			24.0	.582	41.3
1922			25.0	.545	45.9
1923			27.2	.557	48.8
1924			21.9	.569	38.4
1925			21.3	.574	37.1
1926			21.1	.596	35.3
1927			19.4	.575	33.6
1928			18.3	.579	31.6
1929			19.2	.558	34.3
1930			18.2	.537	33.9
1931			16.4	.547	30.1
1932			15.0	.561	26.7
1933			16.3	.562	29.0
1934			18.6	.557	33.4
1935			19.1	.556	34.4
1936			20.0	.557	35.9
1937			23.6	.547	43.1
1938			22.4	.551	40.6
1939			21.8	.550	39.6
1940			23.2	.548	42.2
1941			24.1	.547	44.0
1942			24.2	.549	44.1
1943			24.2	.549	44.1
1944			24.2	.548	44.1
1945			25.2	.548	46.0
1946			27.8	.546	51.0
1947			34.9	.550	63.3
1948			43.4	.555	78.2
1949			47.0	.546	86.1
1950			48.2	.547	88.1
1951			53.6	.551	97.3
1952			54.8	.553	99.2
1953			57.0	.551	104
1954			57.6	.550	105
1955			58.8	.549	107
1956			62.2	.546	114
1957			65.4	.540	121

MP-12, SOURCES

COL. A, *Stat. Abstract 1901*, Table 155, p. 449, prices of pig iron, no. 1 foundry, dollars per ton, at Philadelphia (source, American Iron and Steel Association).

COL. B, Ratio, Col. E/Col. A.

COL. C

1890-1955. *Metal Stat. 1955*, p. 54, annual averages of composite pig iron (from *American Metal Market*).

1956-57. *Metal Stat. 1958*, p. 63.

COL. D, Ratio, Col. C/Col. E.

COL. E, Preferred series

1870-89. Col. A times average ratio in Col. B (1.616).

1890-1957. BLS price series 10-16-01 to 10-16-05 (*Wholesale Prices* Bulls.) combined by weighting by average production for 1951-53 as follows, in million tons (source, *Annual Statistical Report* of the American Iron and Steel Institute):

Basic	48.1
Bessemer	7.51
Malleable	3.06
Foundry northern	1.27
Foundry southern	1.17

MP-12, NOTES

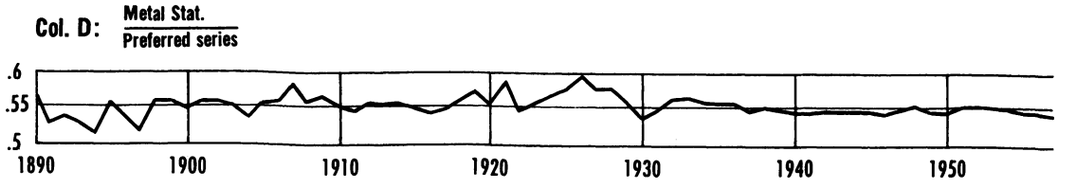
These prices represent only the small portion of pig iron which is sold and not transferred in molten form to steel furnaces. The *American Metal Market* composite pig iron price is computed with varying components and weights. In recent years it has had the following weights (according to *Metal Statistics*):

	1949	*1954*	*1958*
Basic	2 tons	1 ton	1 ton
Bessemer	1 ton	1 ton	1 ton
Malleable	0	1 ton	2 tons
Foundry no. 2	7 tons	7 tons	6 tons

As can be seen by comparing these figures with those above for Col. E, there is little resemblance between the *American Metal Market* weights and relative volumes of output of the different types of pig iron. However, the price movements of the different components are so similar that our price index (Col. E) moves very much as does the *American Metal Market* composite price (Col. C). See chart below.

The price movements of foundry pig iron at Philadelphia are very similar to those of our index for the period of overlap, 1890-1901 (see Col. B), and provide the basis for extrapolating the index back to 1870.

Col. E. Not all the BLS relatives cover the entire period: basic, Bessemer, and foundry northern go back to 1890; foundry southern begins in 1913; the malleable series starts in 1931.



MP-13. STEEL: Price

	BLS (1926 = 100)	Col. C / Col. A	Preferred series, average price (cents per lb.)
	A	B	C
1899			2.37
1900			2.26
1901			2.15
1902			2.06
1903			1.97
1904			1.77
1905			1.73
1906			1.90
1907			2.06
1908			1.98
1909			1.74
1910			1.79
1911			1.66
1912			1.62
1913	70.9	.024	1.72
1914	61.4	.025	1.52
1915	64.7	.025	1.63
1916	110	.026	2.80
1917	177	.025	4.46
1918	147	.026	3.79
1919	130	.026	3.32
1920	157	.023	3.63
1921	109	.025	2.69
1922	98.1	.024	2.31
1923	117	.025	2.95
1924	109	.026	2.84
1925	102	.026	2.68
1926	100	.026	2.64
1927	94.2	.027	2.53
1928	93.4	.027	2.50
1929	94.8	.027	2.54
1930	89.0	.026	2.32
1931	83.3	.026	2.20
1932	79.4	.027	2.15
1933	78.5	.028	2.16
1934	86.6	.028	2.42
1935	86.6	.028	2.44
1936	87.5	.028	2.41
1937	98.0	.029	2.84
1938	98.5	.028	2.78
1939	95.7	.028	2.64
1940	95.1	.028	2.65
1941	96.3	.028	2.65
1942	97.1	.027	2.65
1943	97.1	.027	2.65
1944	97.0	.027	2.65
1945	99.1	.028	2.73
1946	110	.027	3.00
1947	134	.026	3.42
1948	155	.025	3.91
1949	158	.027	4.21
1950	168	.026	4.40
1951	184	.026	4.71
1952	186	.026	4.83
1953	196	.026	5.12
1954	198	.027	5.33
1955	210	.027	5.61
1956	231	.026	6.00
1957	248	.026	6.55

MP-13, SOURCES

Col. A

1913-25. *Bus. Stat. 1938*, p. 14 (source, Bureau of Labor Statistics).

1926-55. BLS iron and steel price index, BLS mimeographed sheets, revised wholesale price index (1947-49 = 100), linked to above series at 1926.

1956-57. BLS *Wholesale Prices* Bulls., series 10.1.

Col. B, Ratio, Col. C/Col. A.

Col. C, Preferred series. *Metal Stat. 1955*, p. 154, and *1959*, p. 213, composite finished steel.

MP-13, NOTES

Col. A. The BLS price index for iron and steel covers ore (1%), pig (5%), scrap (6%), foundry and forge products (17%), semifinished products (6%), and finished products (64%). The numbers in parentheses represent the relative importance of the components in 1954.

Col. C. Computed by *American Metal Market*. The following weights have been used since 1933:

Bars	2 lb.
Plates	1½
Shapes	1
Sheets	1½
Pipe	1½
Wire nails	1
Strips	1
Tin plate	½
Total	10

MP-14. FERROALLOYS: Price (Weighted by Output)

	Manganese	Chromite	Tungsten	Molybdenum	All ferroalloys ($ mil.)		
	(million dollars, 1954 output weights)				1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G
1900		1.46	3.29				
1901		2.29	2.12				
1902		2.12	2.53				
1903		2.19	2.05				
1904		2.19	3.38				
1905		2.49	4.58				
1906		2.45	5.14				
1907		2.84	7.43				
1908		2.94	4.69				
1909		2.02	5.19				
1910		1.94	6.31				
1911		1.98	4.90				
1912		2.00	5.15				
1913	4.76	1.63	5.95		.172	7.07	
1914	4.64	2.15	6.01	64.01	.172	6.93	76.8
1915	8.20	1.63	24.07	40.45	.479	8.64	74.3
1916	18.89	2.25	27.91	63.49	.729	16.40	113
1917	26.70	3.50	15.12	90.50	.705	21.78	136
1918	22.68	7.00	19.09	93.13	.694	19.87	142
1919	11.61	3.71	14.80	73.41	.423	12.05	104
1920	15.79	2.62	6.46	31.55	.385	11.37	56.4
1921	6.49	1.50			.173	4.93	28.0
1922	5.84	2.99			.173	4.65	34.9
1923	9.44	2.45	8.21	32.07	.291	7.87	52.2
1924	8.51	.58	6.96	48.00	.253	8.24	64.0
1925	9.37	2.84	8.68	53.32	.297	9.17	74.2
1926	7.74	2.15	9.12	53.32	.271	8.24	72.3
1927	7.71	3.67	8.52	52.04	.266	8.13	71.9
1928	8.44	3.27	8.54	37.00	.279	7.63	57.2
1929	8.51	2.16	10.79	37.06	.308	7.80	58.5
1930	7.63	3.47	9.93	35.20	.282	7.14	56.2
1931	6.72	1.91	9.05	32.00	.251	6.36	49.7
1932	5.79	2.03	7.56	32.00	.214	5.73	47.4
1933	6.12	2.00	7.87	47.94	.224	6.91	63.9
1934	6.94	1.84	11.97	44.36	.293	7.41	65.1
1935	6.94	1.75	10.98	42.69	.280	7.25	62.3
1936	6.15	1.61	12.18	42.50	.282	6.86	62.4
1937	7.89	.94	16.02	43.72	.363	8.16	68.6
1938	7.97	1.93	14.22	44.74	.343	8.17	68.9
1939	7.07	1.89	14.06	43.78	.324	7.58	66.8
1940	8.98	1.58	16.93	43.46	.398	8.83	70.9
1941	9.83	3.14	19.23	43.33	.447	9.46	75.5
1942	10.60	4.33	19.81	45.57	.472	10.1	80.3
1943	10.99	4.92	20.60	45.70	.492	10.4	82.2
1944	10.99	5.97	19.18	45.44	.475	10.2	81.6
1945	10.99	6.22	19.03	45.44	.474	10.2	81.7
1946	10.99	4.18	16.57	43.97	.436	10.0	75.7
1947	11.22		19.25	43.78	.477	10.3	78.4
1948	12.15		21.58	44.04	.526	11.0	81.9
1949	13.78	4.52	21.67	53.12	.557	12.5	93.1
1950	14.09		23.21	54.21	.587	12.8	98.1
1951	15.02	11.83	50.13	61.00	.980	15.4	138
1952	16.33	13.63	52.12	61.09	1.034	16.3	143
1953	18.42	9.54	51.31	62.28	1.054	17.5	142
1954	18.26	7.16	51.43	64.07	1.046	17.5	141
1955	17.72	7.08	50.76	66.18	1.027	17.3	142
1956	20.28	6.86	47.56	71.62	1.030	18.9	146
1957	23.45	7.68	20.31	75.72	.725	19.3	127

MP-14, SOURCES

COL. A, Manganese. Table MP-16, Col. B, times .07735 million (1954: value of output of ore having at least 5% Mn, divided by price index).

COL. B, Chromite. *Hist. Stat. 1949,* series G-107/series G-106, and continuation series in *Stat. Abstract,* times .1458 million (1954: value of output divided by average value per long ton).

COL. C, Tungsten. Table MP-18, Col. A, times .8215 million (1954: value of output of concentrate, divided by price).

COL. D, Molybdenum. *Hist. Stat. 1949,* series G-111/series G-110, and continuation series in *Stat. Abstract,* times 64.03 million (1954: value of output of concentrate, divided by average value per pound of Mo content).

COLS. E and F, Price indicators, all ferroalloys, 1902 and 1929 output weights. Computed exactly as Col. G, except that 1902 and 1929 values of output were used in computing the weighting factors.

COL. G, Price indicator, all ferroalloys, 1954 output weights. Sum of Cols. A through D.

MP-14, NOTES

The weighting factors used are values of output in the respective weighting years, divided by the respective price series indicated above. Value-of-output data (in thousands of dollars) and sources thereof are given in the table below:

Commodity	*1954*	*1929*	*1902*
Manganese (at least 5% Mn)	[a] 18,255	[b] 4,887	[c] 61
Chromite	[d] 7,164	[e] 4	[e] 5
Tungsten (concentrate)	[f] 51,433	[e] 654	[e] 34
Molybdenum (concentrate)	[f] 64,070	[e] 2,259	[g]

[a] *Min. Yearbook 1954,* Vol. I, p. 59; includes manganese and and manganiferous ores.

[b] *Min. Resources 1929,* Part I, p. 279, sum of cols. 3, 6, and 9; includes manganese and manganiferous ores.

[c] *Min. Resources 1905,* p. 81. An examination of import prices of ferromanganese (*Min. Resources 1918,* Part I, p. 637) indicates the 1903 price was close to that in 1913. Accordingly, we have used the 1913 price in Table MP-16 as a divisor with the above value to get the weight for the 1902-weighted index.

[d] *Min. Yearbook 1954,* Vol. I, p. 304.

[e] *Hist. Stat. 1949,* p. 150, series G-111, G-109, G-107.

[f] *Min. Yearbook 1954,* Vol. I, p. 59.

[g] Not available; assumed negligible.

MP-15. FERROALLOYS: Price (Weighted by Consumption)

(million dollars, 1954 consumption weights)

	Manganese	Nickel	Molybdenum	Tungsten	Chromite	Total
	A	B	C	D	E	F
1870						
1871		158				
1872		61				
1873		97				
1874		108				
1875		146				
1876						
1877		92				
1878		69				
1879		43				
1880		39				
1881		47				
1882		46				
1883		40				
1884						
1885						
1886						
1887		37				
1888		37				
1889		35				
1890		35				
1891		35				
1892		32				
1893		26				
1894		20				
1895		17				
1896		15				
1897		19				
1898		21				
1899		22				
1900		22		1.0	8.2	66
1901		25		.7	12.8	82
1902		27		.8	11.9	84
1903		28		.6	12.3	87
1904		27		1.0	12.3	86
1905		29		1.4	13.9	94
1906		32		1.6	13.7	100
1907		32		2.3	15.9	107
1908		32		1.5	16.5	106
1909		31.3		1.6	11.3	94
1910		32.5		2.0	10.9	96
1911		29.6		1.5	11.1	90
1912		30.7		1.6	11.2	92
1913	23.8	33.4		1.8	9.1	94
1914	23.2	33.5	26.9	1.9	12.0	97.5
1915	41.0	35.3	17.0	7.4	9.1	110
1916	94.4	21.9	26.7	8.6	12.6	164
1917	133	32.9	38.0	4.7	19.6	228
1918	113	16.6	39.1	5.9	39.2	214
1919	58.0	29.3	30.8	4.6	20.8	143
1920	78.9	26.5	13.3	2.0	14.7	135
1921	32.4	27.5			8.4	79
1922	29.2	25.2			16.7	84
1923	47.2	18.1	13.5	2.5	13.7	95.0
1924	42.5	16.7	20.2	2.2	3.2	84.8
1925	46.8	17.1	22.4	2.7	15.9	105
1926	38.7	22.2	22.4	2.8	12.0	98.1
1927	38.5	22.0	21.9	2.6	20.6	106
1928	42.2	21.0	15.5	2.6	18.3	99.6
1929	42.5	21.2	15.6	3.3	12.1	94.7
1930	38.1	20.9	14.8	3.1	19.4	96.3
1931	33.6	21.1	13.4	2.8	10.7	81.6
1932	28.9	20.9	13.4	2.3	11.4	76.9
1933	30.6	20.6	20.1	2.4	11.2	84.9
1934	34.7	21.1	18.6	3.7	10.3	88.4
1935	34.7	21.1	17.9	3.4	9.8	86.9
1936	30.7	21.0	17.8	3.8	9.0	82.3
1937	39.4	20.6	18.4	5.0	5.3	88.7
1938	39.8	20.9	18.8	4.4	10.8	94.7
1939	35.3	20.9	18.4	4.3	10.6	89.5
1940	44.9	20.8	18.3	5.2	8.8	98.0
1941	49.1	20.9	18.2	5.9	17.6	112
1942	53.0	21.0	19.1	6.1	24.2	123
1943	54.9	21.0	19.2	6.4	27.6	129
1944	54.9	21.5	19.1	5.9	33.4	135
1945	54.9	22.7	19.1	5.9	34.8	137
1946	54.9	22.6	18.5	5.1	23.4	124
1947	56.1	25.0	18.4	6.0		129
1948	60.7	27.5	18.5	6.7		137
1949	68.9	31.0	22.3	6.7	25.3	154
1950	70.4	35.0	22.8	7.2		177
1951	75.1	43.8	25.6	15.5	66.2	226
1952	81.6	46.4	25.6	16.1	76.3	246
1953	92.1	49.9	26.2	15.9	53.4	237
1954	91.3	53.0	26.9	15.9	40.1	227
1955	88.6	56.7	27.8	15.7	39.6	228
1956	101	59.5	30.1	14.7	38.4	244
1957	117	65.1	31.8	6.3	43.0	263

MP-15, SOURCES

COL. A, Manganese. Table MP-14, Col. A, times 5.0 (1954: ratio of value of consumption (Table MC-13) to value of production (Table MP-14)).

COL. B, Nickel. Table MP-17, Col. F, multiplied by 83.2 million lb. (1954: ratio of value of consumption (Table MC-13) to price Table MP-17)).

COL. C, Molybdenum. Table MP-14, Col. D, multiplied by .42 (1954: ratio of value of consumption to value of production: *Min. Yearbook 1954*, p. 839).

COL. D, Tungsten. Table MP-18, Col. A, times 254,000 short ton units (pounds of metal consumed times $\frac{232}{184} \cdot \frac{1}{20}$ to convert to units of 20 lbs. WO_3: *Min. Yearbook 1954*, Vol. I, p. 1225).

COL. E, Chromite. Table MP-14, Col. B, times 5.6 (1954: ratio of value of consumption to value of production: *Min. Yearbook 1954*, pp. 306 and 305).

COL. F, Sum of Cols. A through E, with links for missing years.

MP-16. FERROMANGANESE: Price

	Bureau of Mines (dollars per long ton)	Preferred series, BLS index (1926 = 100)
	A	B
1913		61.5
1914	44.1	60.0
1915	64.1	106
1916	134	244
1917	207	345
1918	226	293
1919	137	150
1920	151	204
1921	122	83.9
1922	65.9	75.5
1923	105	122
1924	101	110
1925	102	121
1926	96.1	100
1927	93.6	99.6
1928	94.1	109
1929	99.3	110
1930	94.5	98.6
1931	81.7	86.8
1932	71.9	74.8
1933	73.6	79.1
1934	83.4	89.6
1935	84.1	89.6
1936	74.7	79.5
1937	85.3	102
1938	85.6	103
1939	81.4	91.4
1940	95.1	116
1941	125	127
1942	141	137
1943	145	142
1944	143	142
1945	145	142
1946	139	142
1947	146	145
1948	153	157
1949	173	178
1950	178	182
1951	172	194
1952	203	211
1953	230	238
1954	220	236
1955	218	229
1956	253	262
1957	267	303

MP-16, SOURCES

COL. A, *Mineral Resources* and *Minerals Yearbook*, various volumes, "Ferromanganese shipped from furnaces in the United States," value divided by tonnage (converted from short tons to long tons after 1938).

COL. B, Preferred series. BLS *Wholesale Prices* Bulls., series 429, 429.1, and 10-16-11, made relative to 1926=100.

MP-16, NOTES

COL. B. BLS specifications have changed as follows:
1913-1933, "Ferromanganese, furnace."
1934-1943, "Ferromanganese, seaboard, Atlantic ports."
1944-May 1953, "Ferromanganese, lump, 78-82% Mn, f.o.b. seaboard, Atlantic ports."
June 1953-1957, "Ferromanganese, lump, 74-76% Mn."
The price index shown is adjusted for these changes in specifications.

MP-17. NICKEL: Price

(cents per pound)

	U.S. output of nickel (av. value)	Imports		Exports, nickel, oxide, & matte	Ratios	Preferred series, av. value of imports
		Nickel	Oxide, alloy, & matte			
	A	B	C	D	E	F
1871		272				190
1872		104				73
1873		166				116
1874		186				130
1875		252				176
1876					Col. C / Col. B	
1877		159				111
1878		118	92.1		.78	83
1879		74.6	67.0		.90	52
1880		67.3	65.2		.97	47
1881		80.9	79.3		.98	57
1882		78.2	70.7		.90	55
1883		68.9	74.1		1.08	48
1884			66.6			
1885			60.8		Col. C / Col. A	
1886			51.1			
1887	64.8		46.7		.72	45
1888	62.5		43.6		.70	44
1889	60.0		42.6		.71	42
1890	60.0					42
1891	60.0					42
1892	55.0					38
1893	44.9					31
1894	34.0					24
1895	30.0					21
1896	25.6					18
1897	33.0					23
1898	35.5					25
1899	38.0				Col. F / Col. A	27
1900	40.0			23.6	.68	27
1901	53.0			25.9	.57	30
1902	47.0			28.6	.70	33
1903	40.2			29.1	.85	34
1904	47.5			28.3	.69	33
1905				30.3		35
1906				32.9		38
1907				32.4	Col. F / Col. D	38
1908				33.8		39
1909				34.0	1.11	37.6
1910				30.9	1.27	39.1
1911				33.0	1.08	35.6
1912				33.0	1.12	36.9
1913				33.2	1.21	40.1
1914				34.3	1.17	40.3
1915						42.4
1916						26.3
1917						39.6
1918						20.0
1919						35.2
1920						31.8
1921						33.1
1922						30.3
1923						21.7
1924						20.1
1925						20.5
1926						26.7
1927						26.4
1928						25.2
1929						25.5
1930						25.1
1931						25.3
1932						25.1
1933						24.8
1934						25.4
1935						25.3
1936						25.2
1937						24.8
1938						25.1
1939						25.1
1940						25.0
1941						25.1
1942						25.2
1943						25.2
1944						25.9
1945						27.3
1946						27.2
1947						30.1
1948						33.1
1949						37.2
1950						42.1
1951						52.6
1952						55.8
1953						60.0
1954						63.7
1955						68.1
1956						71.5
1957						78.3

MP-17, SOURCES

COL. A, *Min. Resources 1905,* p. 415, "Production of nickel from domestic ores in the United States," value divided by quantity.

COL. B, *Min. Resources 1897,* Part VI, p. 251, "Nickel imported and entered for consumption in the U.S.," value divided by quantity.

COL. C, *Ibid.,* "Nickel oxide, alloy of nickel with copper, and nickel matte," value divided by quantity.

COL. D., *Min. Resources 1905,* p. 418, *1909,* Part I, p. 583; *1915,* Part I, p. 759. "Exports of nickel, nickel oxide, and matte," value divided by quantity.

COL. E

1878-83. Ratio, Col. C/Col. B.
1887-89. Ratio, Col. C/Col. A.
1900-04. Ratio, Col. F/Col. A.
1909-14. Ratio, Col. F/Col. D.

COL. F, Preferred series

1871-83. Col. B times average ratio for 1900-04 in Col. E (.70).
1887-99. Col. A times average ratio for 1900-04 in Col. E (.70).
1900-08. Col. D times average ratio for 1909-13 in Col. E (1.16).
1909-57. *Mineral Resources* and *Minerals Yearbook,* various volumes, imports of "nickel, alloys, pigs, bars, etc.," value divided by quantity (gross).

MP-17, NOTES

The series represents an average unit value of nickel imported for consumption in pigs, ingots, shot, cathodes, cubes, etc., including scrap. The only other series available begins in 1926 and is the contract price set by the International Nickel Co. This price was $.35 per pound for 1926 through 1945.

There is no doubt some important quality variation concealed in this broad classification, but available data do not permit a completely homogeneous series. Average unit value of U. S. output of nickel is not available for years prior to 1887. Average value of metallic nickel imports is not available for the period 1883-1887. The Col. C series appears to have risen in quality as we go back from 1887 to 1883, as indicated by the ratios to metallic nickel prices. It seems better, therefore, to extend the series with the average value of imports of metal, omitting the years 1884-86.

MP-18. TUNGSTEN: Price

	Bureau of Mines (dollars per unit [a])
	A
1900	[b] 4.00
1901	[b] 2.58
1902	[b] 3.08
1903	[b] 2.49
1904	[b] 4.12
1905	[b] 5.57
1906	6.26
1907	9.04
1908	5.71
1909	6.32
1910	7.68
1911	5.97
1912	6.27
1913	7.24
1914	7.32
1915	29.30
1916	33.98
1917	18.40
1918	23.24
1919	18.02
1920	7.86
1921	n.a.
1922	n.a.
1923	[c] 10.00
1924	8.47
1925	10.57
1926	11.10
1927	10.37
1928	10.40
1929	13.13
1930	12.09
1931	11.02
1932	9.20
1933	9.58
1934	14.57
1935	13.37
1936	14.83
1937	19.50
1938	17.31
1939	17.11
1940	20.61
1941	23.41
1942	24.12
1943	25.08
1944	23.35
1945	23.17
1946	20.17
1947	23.43
1948	26.27
1949	26.38
1950	28.25
1951	61.02
1952	63.44
1953	62.46
1954	62.61
1955	61.79
1956	57.90
1957	24.72

MP-18, SOURCES

COL. A, *Mineral Resources* and *Minerals Yearbook*, various volumes, "Average selling price per unit" and "Average per unit[a] of WO_3 f.o.b. mines."

MP-18, NOTES

[a] Unit equals 20 pounds WO_3.

[b] The tungsten content of the ores produced in 1900-05, inclusive, is unknown, but was estimated by the Bureau of Mines at 60% WO_3 (*Min. Resources 1919*, Part I, p. 724, footnote a).

[c] Output by a single company, sold to owners above market.

Domestic prices, 1951-56, were determined by U.S. government purchase; not free market prices.

MP-19. COPPER: Price

	Am. Bu. Metal Stat. (cents per lb.)	BLS, electrolytic copper (1913 = 100)	Aldrich report, ingot (cents per lb.)	Col. A / Col. B	Col. B × 0.155 (cents per lb.)	Col. C × .932 (cents per lb.)	Preferred series, electrolytic copper (cents per lb.)
	A	B	C	D	E	F	G
1870			20.0			18.6	18.6
1871			21.8			20.3	20.3
1872			33.0			30.8	30.8
1873			28.5			26.6	26.6
1874			24.5			22.8	22.8
1875			23.0			21.4	21.4
1876			19.8			18.4	18.4
1877			19.1			17.8	17.8
1878			16.1			15.0	15.0
1879			16.1			15.0	15.0
1880			19.0			17.7	17.7
1881			16.5			15.4	15.4
1882			18.2			17.0	17.0
1883			15.2			14.2	14.2
1884			14.0			13.0	13.0
1885			11.1			10.4	10.4
1886			10.1			9.43	9.43
1887			10.0			9.32	9.32
1888			16.5			15.4	15.4
1889			14.5			13.5	13.5
1890		97.9	17.0		15.2	15.8	15.2
1891		81.1	13.0		12.6	12.1	12.6
1892		71.7			11.1		11.1
1893		67.9			10.5		10.5
1894		58.9			9.13		9.13
1895		66.8			10.4		10.4
1896		68.2			10.6		10.6
1897		70.4			10.9		10.9
1898		74.2			11.5		11.5
1899		110			17.0		17.0
1900		103			16.0		16.0
1901	16.1	105		.154	16.3		16.3
1902	11.6	74.6		.156	11.6		11.6
1903	13.2	85.1		.156	13.2		13.2
1904	12.8	81.5		.157	12.6		12.6
1905	15.6	98.0		.159	15.2		15.2
1906	19.3	122		.158	18.9		19.3
1907	20.0	132		.151	20.5		20.0
1908	13.2	84.8		.156	13.1		13.2
1909	13.0	83.3		.156	12.9		13.0
1910	12.7	82.1		.155	12.7		12.7
1911	12.4	79.3		.156	12.3		12.4
1912	16.3	104		.157	16.2		16.3
1913	15.3	100		.153	15.5		15.3
1914	13.6	85.1		.160	13.2		13.6
1915	17.3	110		.158	17.0		17.3
1916	27.2	175		.155	27.1		27.2
1917	27.2	187		.145	29.1		27.2
1918	[a] 24.6	157		[a] .157	24.3		[a] 24.6
1919	18.7	122		.154	18.8		18.7
1920	17.5	114		.153	17.7		17.5
1921	12.5	80.2		.156	12.4		12.5
1922	13.4	85.4		.157	13.2		13.4
1923	14.4	92.2		.156	14.3		14.4
1924	13.0	83.1		.157	12.9		13.0
1925	14.0	89.5		.157	13.9		14.0
1926	13.8	87.7		.157	13.6		13.8
1927	12.9	82.4		.157	12.8		12.9
1928	14.6	92.5		.158	14.4		14.6
1929	18.1						18.1
1930	13.0						13.0
1931	8.12						8.12
1932	5.56						5.56
1933	7.02						7.02
1934	8.43						8.43
1935	8.65						8.65
1936	9.47						9.47
1937	13.2						13.2
1938	10.0						10.0
1939	11.0						11.0
1940	11.3						11.3
1941	11.8						11.8
1942	11.8						11.8
1943	11.8						11.8
1944	11.8						11.8
1945	11.8						11.8
1946	13.8						13.8
1947	21.0						21.0
1948	22.0						22.0
1949	19.2						19.2
1950	21.2						21.2
1951	24.2						24.2
1952	24.2						24.2
1953	28.8						28.8
1954	29.7						29.7
1955	37.5						37.5
1956	41.8						41.8
1957	29.6						29.6

MP-19, SOURCES

Col. A, American Bureau of Metal Statistics, *1955 Yearbook*, p. 124, *1956*, p. 131, and *1957*, p. 38, "Electrolytic copper (ingot) at New York."

Col. B, BLS *Wholesale Prices* Bulls., nos. 320 and 493, "Electrolytic copper"; 1921-1928 made relative to 1913=100 (ratio, 0.877).

Col. C, Aldrich report, Vol. III, Part 2, p. 185, "Copper: Ingot" (data furnished for the Manufacturing Chemists Association of the United States), July price.

Col. D, Ratio, Col. A/Col. B.

Col. E, Col. B times the average of the ratios in Col. D for 1906-10 (ratio 0.155).

Col. F, Col. C times the average of the ratios of Col. E to Col. C for 1890 and 1891 (ratio, .932).

Col. G, Preferred series

1870-89. Col. F, transcribed.

1890-1905. Col. E, transcribed.

1906-57. Col. A, transcribed.

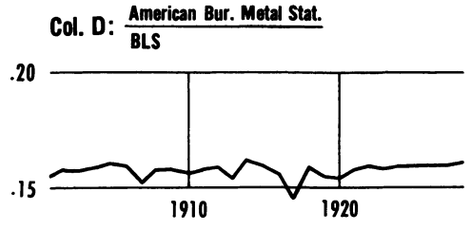
MP-19, NOTES

[a] Average of 11 months.

Col. B. The BLS copper price relatives refer to Lake copper for 1890-1907 and to electrolytic copper at refinery for 1907-28.

Col. C. No further specification is given in the Aldrich report, but the absolute prices are very close to those for Lake copper in BLS.

Col. D. The chart shows the ratio of the American Bureau of Metal Statistics series to the BLS series. No difference in trend is apparent.



For an intensive study of the factors affecting copper prices (particularly monopolistic influences), see Orris C. Herfindahl, *Copper Costs and Prices, 1870-1957* (Johns Hopkins Press and Resources for the Future, 1959).

MP-20. LEAD: Price

	Aldrich report., BLS, and Bu. Mines (cents per lb.)	Preferred series, Hist. Stat. & Bu. Mines
	A	B
1870	7.8	6.2
1871	7.5	6.1
1872	7.6	6.3
1873	8.2	6.3
1874	8.1	6.0
1875	7.8	5.8
1876	7.3	6.1
1877	5.6	5.5
1878	3.7	3.6
1879	4.3	4.1
1880	5.4	5.0
1881	4.9	4.8
1882	5.0	4.9
1883	4.4	4.3
1884	3.7	3.7
1885	3.9	3.9
1886	4.7	4.6
1887	4.4	4.5
1888	4.4	4.4
1889	3.9	3.9
1890	4.4	4.5
1891	4.4	4.3
1892	4.1	4.1
1893	3.7	3.7
1894	3.3	3.3
1895	3.3	3.2
1896	3.0	3.0
1897	3.6	3.6
1898	3.8	3.8
1899	4.5	4.5
1900	4.5	4.4
1901	4.4	4.4
1902	4.1	4.1
1903	4.3	4.3
1904	4.4	4.3
1905	4.8	4.7
1906	5.9	5.7
1907	5.5	5.3
1908	4.2	4.2
1909	4.3	4.3
1910	4.5	4.5
1911	4.5	4.5
1912	4.4	4.5
1913	4.4	4.4
1914	3.9	3.9
1915	4.6	4.7
1916	6.8	6.8
1917	9.1	8.7
1918	7.4	7.5
1919	5.8	5.8
1920	8.1	8.1
1921	4.6	4.5
1922	5.8	5.7
1923	7.4	7.2
1924	8.3	8.1
1925	9.1	9.0
1926	8.4	8.4
1927	6.8	6.7
1928	6.3	6.3
1929	6.8	6.8
1930	5.5	5.5
1931	4.2	4.2
1932	3.2	3.2
1933	3.9	3.9
1934	3.9	3.9
1935	4.1	4.1
1936	4.7	4.7
1937	6.0	6.0
1938	4.7	4.7
1939	5.1	5.0
1940	5.2	5.2
1941	5.8	5.8
1942	6.5	6.5
1943	6.5	6.5
1944	6.5	6.5
1945	6.5	6.5
1946	8.2	8.1
1947	14.7	14.7
1948	18.0	18.0
1949	15.4	15.4
1950	13.3	13.3
1951	17.5	17.5
1952	16.4	16.5
1953	13.5	13.5
1954	14.1	14.0
1955	15.1	15.1
1956	16.0	16.0
1957	14.7	14.7

MP-20, SOURCES

COL. A

1870-89. Aldrich report, Part 2, p. 192 (data furnished for the Manufacturing Chemists Association of the United States).

1890-1954. BLS *Wholesale Prices* Bulls., series 10-22-11 and 473, "Delivered pig lead at N.Y."

1955-57. *Min Yearbook 1957,* Vol. I, p. 709, "Average quoted price at New York."

COL. B, Preferred series. *Hist. Stat. 1960,* series M-238, and *Min. Yearbook 1957,* Vol. I, p. 709.

MP-20, NOTES

Two series are available in the Aldrich report for 1870-91. Between 1877 and 1891 the differences are negligible. Prior to 1877, however, the differences are considerable.

For 1890 and 1891, the BLS price was 4.4 cents per lb. The Aldrich report price for the same years was 4.3 and 4.4 cents, respectively.

For the balance of the period, other series are available in *Metal Stat. 1955,* the *Yearbook* of the American Bureau of Metal Statistics, and Bureau of Mines publications. Differences between these series and the BLS series are negligible and in no way affect the trend.

The *Historical Statistics* series for 1870-79 is from Walter R. Ingalls, *Lead and Zinc in the United States* (Hill Publishing Co., 1908); the later figures are from *Metal Stat. 1957.*

MP-21. ZINC: Price

	Aldrich report, domestic spelter (cents per lb.)	Preferred series, prime western at New York (cents per lb.)
	A	B
1870	7.0	7.0
1871	7.0	7.0
1872	7.0	7.0
1873	8.6	8.6
1874	7.0	7.0
1875	7.4	7.4
1876	7.2	7.2
1877	5.9	5.9
1878	4.5	4.5
1879	4.5	4.5
1880	5.3	5.51
1881	4.9	5.24
1882	4.9	5.32
1883	4.5	4.50
1884	4.6	4.44
1885	4.2	4.34
1886	4.4	4.40
1887	4.5	4.62
1888	4.4	4.91
1889	4.8	5.02
1890	5.5	5.55
1891	5.0	5.02
1892		4.63
1893		4.08
1894		3.52
1895		3.63
1896		3.94
1897		4.12
1898		4.57
1899		5.75
1900		4.40
1901		4.08
1902		4.90
1903		5.62
1904		5.17
1905		6.00
1906		6.27
1907		6.20
1908		4.74
1909		5.52
1910		5.66
1911		5.91
1912		7.11
1913		5.80
1914		5.30
1915		14.4
1916		13.8
1917		9.11
1918		8.31
1919		7.39
1920		8.13
1921		5.15
1922		6.09
1923		7.01
1924		6.70
1925		8.01
1926		7.72
1927		6.60
1928		6.38
1929		6.84
1930		4.91
1931		3.99
1932		3.25
1933		4.40
1934		4.51
1935		4.70
1936		5.28
1937		6.87
1938		4.99
1939		5.51
1940		6.73
1941		7.87
1942		[a] 8.66
1943		[a] 8.66
1944		[a] 8.65
1945		[a] 8.65
1946		[a] 9.15
1947		[a] 11.0
1948		[a] 14.2
1949		[a] 12.9
1950		[a] 14.6
1951		[a] 18.8
1952		[a] 17.0
1953		11.5
1954		11.2
1955		12.8
1956		14.0
1957		11.9

MP-21, SOURCES

COL. A, Aldrich report, Vol. III, Part 2, p. 213, "Spelter: Domestic" (the prices are from New York Shipping and Commercial list), July prices.

COL. B, Preferred series

1870-79. Col. A, transcribed.

1880-1957. *Metal Stat. 1955*, p. 587, and *1958*, p. 577, "Price per pound for prime western slab zinc at New York."

MP-21, NOTES

[a] Includes 3% Federal transportation tax.

MP-22. BAUXITE: Price

(dollars per long ton)

	Average value at mines, crude ore	Average value, as shipped, from mines or plants	Preferred series, value at mines as shipped
	A	B	C
1889			3.25
1890			3.26
1891			3.25
1892			3.25
1893			3.21
1894			3.24
1895			2.58
1896			2.58
1897			2.80
1898			3.00
1899			3.56
1900			3.87
1901			4.23
1902			4.41
1903			3.56
1904			4.95
1905			4.99
1906			4.89
1907			4.91
1908			5.06
1909			5.26
1910			4.81
1911			4.82
1912			4.81
1913			4.75
1914			4.87
1915			5.10
1916			5.40
1917			5.48
1918			5.69
1919			5.85
1920			6.23
1921			6.38
1922			6.50
1923			6.04
1924			6.15
1925			6.28
1926			6.16
1927			6.20
1928			6.06
1929			6.19
1930			5.83
1931			5.82
1932			5.69
1933			5.99
1934			7.15
1935			6.65
1936			5.91
1937			5.82
1938			5.82
1939			5.77
1940	3.44		5.93
1941	4.31		5.94
1942	4.30		5.93
1943	4.21		5.81
1944	4.33		5.98
1945	4.49		6.20
1946	5.10		7.04
1947	4.82		6.65
1948	5.08	6.69	6.82
1949	4.98	6.68	6.81
1950	4.84	6.57	6.70
1951		7.62	7.77
1952		6.90	7.04
1953		8.02	8.18
1954		7.83	7.99
1955		7.73	7.88
1956		8.13	8.29
1957		8.28	8.45

MP-22, SOURCES

COL. A, Average value at mines, per long ton of crude ore. *Min. Yearbook 1944*, p. 668; *1948*, p. 178; and *1950*, p. 172: "Value f.o.b. mine" divided by quantity "crude" of "Shipments to processing plants, consumers, and government stock piles."

COL. B, Average value, as shipped, all mines and processing plants. *Min. Yearbook 1952*, Vol. I, p. 189; *1955*, Vol. I, p. 210; and *1959*, Vol. I, p. 224: "Value" divided by "Shipments from mines and processing plants: As shipped."

COL. C, Preferred series, average value at mines, as shipped.

1889-1928. *Min. Resources 1905, p.* 1171; *1913*, Part I, p. 2; *1918*, Part I, p. 513; *1921*, Part I, p. 63; *1925*, Part I, p. 17; and *1929*, Part I, p. 488: "Value" divided by "Production."

1929-34. *Min. Yearbook 1934*, p. 369; and *1937*, p. 666: "Value" divided by "Production."

1935-41. *Min. Yearbook 1940*, p. 639; and *1943*, p. 687: "Value" divided by "Shipments from mines: As shipped."

1942-50. Col. A linked to the Col. C series at 1941 (ratio 1.378).

1951-57. Col. B linked to the Col. C series at 1950 (ratio 1.02).

MP-22, NOTES

The price per long ton of bauxite is an average unit value "computed from selling prices and values assigned by producers."

The series is unsatisfactory because prices were not determined by transactions on the open market, since bauxite is produced for consumption by the producer or an affiliate. Moreover, quantities "as shipped" refer to various stages of processing and different chemical analyses.

MP-23. ALUMINUM: Price

	Am. Bu. Metal Stat.: New York price (cents per lb.)	Col. C / Col. A	Preferred series, Am. Bu. Metal Stat. and Am. Metal Mkt., producers' av. price (cents per lb.)
	A	B	C
1895			58.7
1896			50.7
1897			39.0
1898			30.6
1899			32.7
1900			32.7
1901			33.0
1902			33.0
1903			33.0
1904			35.0
1905	35.0	.948	33.2
1906	35.8	1.10	39.4
1907	45.0	.842	37.9
1908	28.7	1.02	29.3
1909	22.0	1.09	24.0
1910	22.2	.991	22.0
1911	20.1	1.01	20.4
1912	22.0	.932	20.5
1913	23.6	.907	21.4
1914	18.6	1.04	19.4
1915	34.0	.724	24.6
1916	60.7	.585	35.5
1917	51.6	.732	37.8
1918	33.5	.982	32.9
1919	32.1	1.03	33.0
1920	32.7	1.02	33.3
1921	21.1	1.25	26.3
1922	18.7	1.12	20.9
1923	25.4	1.02	26.0
1924	27.0	1.03	27.8
1925	27.2	1.04	28.2
1926	27.0	1.02	27.5
1927	25.4	1.02	25.8
1928	23.9	1.02	24.3
1929	23.9	1.02	24.3
1930	23.8	1.00	23.8
1931	23.3	1.00	23.3
1932	23.3	1.00	23.3
1933	23.3	1.00	23.3
1934	21.6	1.03	22.2
1935	20.5	.951	19.5
1936	20.5	.927	19.0
1937	20.1	.985	19.8
1938	20.0	1.00	20.0
1939	20.0	1.00	20.0
1940	18.7	1.01	18.8
1941	16.5	1.00	16.5
1942	15.0	1.00	15.0
1943	15.0	1.00	15.0
1944	15.0	1.00	15.0
1945	15.0	1.00	15.0
1946	15.0	1.00	15.0
1947	15.0	1.00	15.0
1948	15.7	.987	15.5
1949	17.0	1.00	17.0
1950	17.7	.994	17.6
1951	19.0	1.00	19.0
1952	19.4	1.00	19.4
1953	20.9	1.00	20.9
1954	21.8	1.00	21.8
1955	23.7	1.00	23.7
1956	26.0		26.0
1957	27.5		27.5

MP-23, SOURCES

COL. A, American Bureau of Metal Statistics, *Yearbook 1954, 1955*, p. 104, and *1959*, p. 96, price at New York.

COL. B, Ratio, Col. C/Col. A.

COL. C, Preferred series

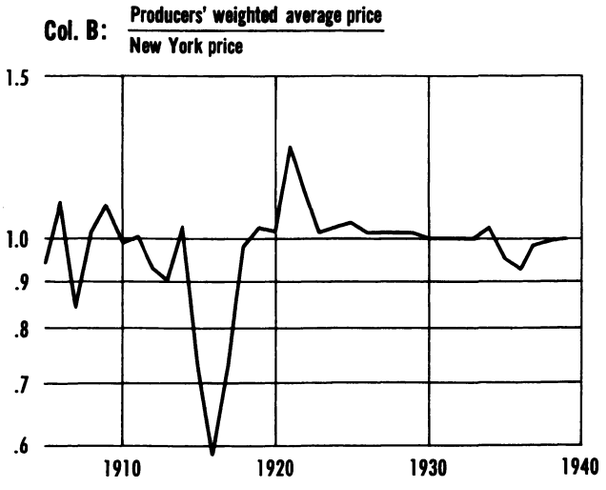
1895-1954. U.S. Department of Commerce, Business and Defense Services Administration, *Materials Survey, Aluminum* (Nov. 1956), Table IV-1, United States prices of primary aluminum, 99% ingot. (Original sources 1895-1904, American Bureau of Metal Statistics, and 1905-1954, *American Metal Market*).

1955-57. *Metal Stat. 1956*, p. 614, and *1958*, p. 619 (from *American Metal Market*), "Producers' weighted average prices, 99% pure."

MP-23, NOTES

The two price series for aluminum agree generally in trend but differ considerably in fluctuation prior to 1926 (see chart). The New York wholesale price shows a greater degree of fluctuation than the producers' price, and a greater response to temporary shortages or abundances. After 1926, the absolute prices for both series show no sudden changes.

The *Metal Statistics* series, from the same source as the *Materials Survey* series, shows identical figures for 1905-54.



MP-24. TIN: Price

	Metal Stat. (cents per lb.)
	A
1880	20.8
1881	20.8
1882	23.4
1883	20.8
1884	18.1
1885	19.5
1886	21.6
1887	24.8
1888	26.2
1889	20.9
1890	21.4
1891	20.2
1892	20.6
1893	20.1
1894	18.1
1895	14.1
1896	13.2
1897	13.6
1898	15.6
1899	27.2
1900	30.0
1901	26.9
1902	27.0
1903	28.2
1904	28.1
1905	31.6
1906	39.8
1907	38.3
1908	29.5
1909	29.8
1910	34.3
1911	42.7
1912	46.4
1913	44.3
1914	35.7
1915	38.7
1916	43.5
1917	61.6
1918	86.8
1919	65.5
1920	50.4
1921	30.0
1922	32.6
1923	42.7
1924	50.2
1925	57.9
1926	65.3
1927	64.4
1928	50.5
1929	45.2
1930	31.7
1931	24.5
1932	22.0
1933	39.1
1934	52.2
1935	50.4
1936	46.4
1937	54.2
1938	42.3
1939	50.2
1940	49.8
1941	52.0
1942	52.0
1943	52.0
1944	52.0
1945	52.0
1946	54.6
1947	77.9
1948	99.2
1949	99.3
1950	95.6
1951	128
1952	120
1953	95.8
1954	91.8
1955	94.7
1956	101.3
1957	96.2

MP-24 (Tin), SOURCES

COL. A, *Metal Stat. 1956*, p. 451, and *1958*, p. 455, Straits tin prices in New York.

MP-24, NOTES

A tin price for years prior to 1880 is available in the Aldrich report (Vol. II, p. 215). This series, however, shows little correspondence to the series above.

MP-25. MAGNESIUM: Price

	Metal Stat. (dollars per lb.)
	A
1918	1.81
1919	1.83
1920	1.60
1921	1.30
1922	1.60
1923	1.25
1924	1.10
1925	.86
1926	.80
1927	.68
1928	.55
1929	.56
1930	.48
1931	.34
1932	.29
1933	.28
1934	.28
1935	.30
1936	.30
1937	.30
1938	.30
1939	.27
1940	.27
1941	.24
1942	.225
1943	.205
1944	.205
1945	.205
1946	.205
1947	.205
1948	.205
1949	.205
1950	.220
1951	.245
1952	.245
1953	.265
1954	.277
1955	.310
1956	.347
1957	.360

MP-25 (Manganese), SOURCES

COL. A, *Metal Stat. 1959*, p. 623, Dollars per pound of 99.8% pure ingots at New York in carload lots up to Dec. 1, 1947, and thereafter f.o.b. Freeport, Texas.

MP-26. NONMETALS: Price

(million dollars; 1954 output weights except as noted)

	Crushed stone	Dimension stone	Sand	Gravel	Clays	Gypsum	Phosphate rock	Potash	Sulfur	Fluorspar	All nonmetals, price indicators		
											1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I	J	K	L	M
1870						15			272				
1871						14			260				
1872						16			197				
1873						16			260				
1874						16			197				
1875						19			208				
1876						14			200				
1877						17			168				
1878						17			159				
1879						16			145				
1880						15	70		159		69	299	802
1881						15	98		185		92	357	979
1882						15	79		194	1.3	77	351	946
1883						15	79		150	1.3	77	295	802
1884						16	73		145	1.3	71	283	769
1885						16	81		133	1.1	78	277	756
1886						15	57		130	1.1	57	248	665
1887						17	50		117	1.0	54	229	606
1888						17	59		116	1.3	61	236	632
1889	154	12				16	71		127	1.2	69	259	704
1890						19	83		112	1.7	87	262	715
1891						19	82		151	2.0	91	317	851
1892						16	64		128	1.9	75	267	711
1893						17	58		99	1.7	75	229	603
1894						18	46		88	1.6	65	205	533
1895						18	46		83	1.5	67	201	518
1896						16	40		95	2.0	63	211	541
1897						15	34		106	1.9	58	223	562
1898						19	35		121	2.1	65	257	640
1899						14	44		112	1.6	74	245	628
1900						14	47		112	1.3	80	251	642
1901						13	47		117	1.5	82	259	664
1902	171	16			39	13	42		124	1.4	77	268	678
1903					48	15	44		118	1.3	79	281	716
1904					38	14	46		116	1.6	78	272	684
1905	178				40	15	46		113	1.6	79	271	684
1906	181	17			43	22	54		118	1.5	85	289	728
1907	193	17			44	17	62		114	1.5	87	293	748
1908	194	16			44	16	63		116	1.5	87	295	751
1909	190	15			45	15	61		117	1.5	82	285	741
1910	184	16			43	14	54		117	1.6	82	280	718
1911	185	16			43	14	51		117	1.8	82	281	714
1912	183	16			42	13	52		117	1.7	82	278	709
1913	186	17	70	85	43	14	50	132	117	1.6	84	282	716
1914	191	17	71	89	46	13	46	136	117	1.5	84	285	727
1915	185	17	67	94	46	12	39	681	117	1.4	82	355	1259
1916	197	15	70	94	48	13	39	1339	166	1.5	80	465	1982
1917	236	18	86	114	57	16	40	1324	229	2.7	97	534	2123
1918	313	23	110	147	69	24	44	1043	171	5.3	122	550	1949
1919	356	26	124	163	82	27	67	548	148	6.5	141	526	1547
1920	409	35	143	190	91	34	81	403	126	6.5	175	570	1518
1921	390	32	128	172	84	32	78	172	84	5.3	162	487	1177
1922	345	32	111	153	75	29	57	116	74	4.6	150	429	997
1923	346	35	114	163	76	27	51	116	74	5.3	157	439	1007
1924	353	35	119	166	77	24	47	112	75	5.0	159	441	1013
1925	343	34	116	163	76	25	44	120	78	4.6	154	434	1004
1926	346	38	117	161	77	23	45	122	96	4.6	167	450	1030
1927	336	37	109	156	75	22	47	126	95	4.6	161	438	1008
1928	332	37	118	155	73	19	47	126	95	4.8	162	439	1007
1929	326	37	108	155	72	19	46	127	95	4.9	157	431	990
1930	323	35	108	148	67	19	47	129	95	4.6	154	424	976
1931	321	36	104	143	66	21	48	129	95	4.4	156	423	967
1932	297	35	99	134	59	21	44	129	95	4.0	147	402	917
1933	286	36	103	138	58	20	42	129	95	3.6	148	399	911
1934	303	28	116	147	58	20	47	101	95	4.1	138	403	919
1935	295	27	115	144	58	20	47	81	95	3.8	134	394	886
1936	303	30	115	146	59	20	45	90	95	4.5	142	405	907
1937	312	30	119	152	61	20	43	97	95	5.2	140	412	934
1938	322	29	119	150	63	20	46	100	93	5.1	142	416	947
1939	306	28	116	147	63	20	43	100	85	5.2	137	399	913
1940	306	26	115	145	64	22	41	108	85	5.2	132	397	917
1941	323	26	117	148	63	21	44	109	85	5.4	137	410	941
1942	329	29	123	155	62	21	47	112	85	6.3	143	424	969
1943	339	35	124	156	62	23	49	109	85	7.4	161	451	989
1944	353	39	125	156	65	25	51	109	85	7.7	178	472	1016
1945	364	40	127	159	67	27	54	109	85	7.8	181	478	1040
1946	390	53	129	162	71	28	60	106	85	8.3	215	520	1092
1947	411	63	144	176	80	32	68	103	87	8.5	249	574	1172
1948	425	68	158	191	83	32	77	99	95	8.6	262	604	1237
1949	443	75	165	198	87	32	75	99	95	8.9	282	637	1278
1950	447	77	166	201	90	32	76	101	100	9.0	286	643	1299
1951	453	80	175	211	94	33	79	106	117	10.6	298	670	1359
1952	467	74	176	212	98	32	79	106	117	11.8	286	668	1373
1953	471	74	181	217	101	33	81	107	131	12.6	289	682	1409
1954	453	71	186	223	100	35	82	106	141	12.8	279	678	1410
1955	454	75	192	231	102	35	83	103	141	11.5	288	689	1427
1956	463	81	198	243	103	36	83	99	141	11.0	306	718	1458
1957	466	79	206	252	109	38	83	94	135	12.2	301	719	1474

MP-26, SOURCES

Computation of Index Weighted by 1954 Outputs:

COL. A, Crushed stone. Table MP-28, Col. K, transcribed.

COL. B, Dimension stone. Table MP-27, Col. I, transcribed.

COL. C, Sand. Table MP-31, Col. C, times 1.169 million (value of output divided by price index).

COL. D, Gravel. Table MP-32, Col. C, times 1.611 million (value of output divided by price index).

COL. E, Clays. Table MP-33, Col. H, times 1.513 (value of output divided by price index).

COL. F, Gypsum. Table MP-36, Col. D, times 9.0 million tons (1954 output, from Table MO-28).

COL. G, Phosphate rock. Table MP-38, Col. F, times 13.2 million long tons (value of output divided by price).

COL. H, Potash. Table MP-39, Col. A, times 1.221 million (value of output divided by price index).

COL. I, Sulfur. Table MP-40, Col. E, times .964 million (value of output divided by price index).

COL. J, Fluorspar. Table MP-41, Col. B, times .255 million tons (value of output divided by price).

COLS. K and L, Price indicators, all nonmetals, 1902 and 1929 outputs. Computed exactly as Col. M, except that 1902 and 1929 outputs were used as weights in the computation.

COL. M, Price indicator, all nonmetals, 1954 weights. Sum, Cols. A through J, linked for missing series.

MP-26, NOTES

The quantity weights used here, except where otherwise noted, are obtained from *1954 Census of Mineral Industries* by dividing "value of shipments" data by our price data.

Sand and gravel values are not separated in the census; we have divided the census total in the proportions shown for values of output in the 1954 *Min. Yearbook*, as follows:

Census: Sand and gravel: $409 million
Min. Yearbook: Sand: $189 million
Min. Yearbook: Gravel: $227 million

$$\text{Estimate of sand value: } \frac{\$189}{\$189 + 227} \times \$409 = \$186$$

$$\text{Estimate of gravel value: } \frac{\$227}{\$189 + 227} \times \$409 = \$223$$

COLS. K and L. The weights used in the computation of the 1902- and 1929-weighted price indicators are as follows:

	Commodity[a]	*1902 output weights*	*1929 output weights*
C	Sand	.058 mil.	.546 mil.
D	Gravel	.014 mil.	.619 mil.
E	Clays	[b] 1.33	1.089
F	Gypsum	.82 mil. tons	5.02 mil. tons
G	Phosphate rock	1.56 mil. long tons	3.73 mil. long tons
H	Potash	0	[c].163 mil.
I	Sulfur	.09 mil.	.374 mil.
J	Fluorspar	.0488 mil. tons	.148 mil. tons

[a] For crushed stone weights, see the notes to Table MP-28; dimension stone, see the notes to Table MP-27. The gypsum weights are outputs given in Table MO-28.

[b] The 1902 value of clay includes $.51 million worth of clay sold by producers, which is not recorded in *Min. Resources 1902*. $.51 million is 24% of the clay total in 1902; that is, the weight is 24% greater than if this were omitted.

[c] The 1939 value of output was used; it covers soda and borate as well as potash.

MP-27. DIMENSION STONE: Price

	Limestone	Granite	Basalt	Sandstone	Marble	Slate	All dimension stone ($ mil.)		
							1902 weights	1929 weights	1954 weights
	(dollars per ton)								
	A	B	C	D	E	F	G	H	I
1879						10.9			
1880						10.9			
1881						11.0			
1882						11.3			
1883						12.2			
1884						12.4			
1885						9.9			
1886						9.7			
1887						9.7			
1888						10.0			
1889	[a]4.1	[a]4.5		[a]3.7	[a]20	10.9	[a]30	[a]26	[a]12
1890						(11.1)			
1891						11.3			
1892						11.5			
1893						11.5			
1894						10.1			
1895						10.4			
1896						10.9			
1897						10.0			
1898						11.1			
1899						10.1			
1900						9.9			
1901						10.2			
1902	[a]3.2	[a]9.1		[a]5.1	[a]27	11.1	[a]39	[a]36	[a]16
1903						12.5			
1904		10.0		[a]5.6		12.4			
1905		9.4		[a]5.3		12.0			
1906	3.75	9.45		[a]5.3	28	12.3	42	38	17
1907	3.93	9.57		[a]5.4	27	12.5	42	38	17
1908	3.80	8.78		[a]4.9	31	12.7	41	38	16
1909	3.51	7.99		[a]4.5	[a]27	12.8	38	34	15
1910	4.24	8.23		[a]4.6	(26)	13.0	40	36	16
1911	4.20	8.35		[a]4.7	25.9	13.1	40	36	16
1912	4.39	8.32		[a]4.7	26.3	13.1	40	36	16
1913	4.67	8.77		[a]4.9	24.7	14.0	42	37	17
1914	4.45	8.35		[a]4.7	26.9	14.1	41	37	17
1915	4.57	8.61		[a]4.8	25.7	13.1	42	37	17
1916[b]	5.36	8.33		4.68			42	38	18
1916[c]	3.92	7.28	.876	3.60	24.9	14.2	37	33	15
1917	4.5	9.66	.989	3.93	33.1	17.1	45	42	18
1918	5.8	11.8	1.98	4.69	38.2	23.4	56	51	23
1919	6.5	13.9	1.10	5.99	43.3	23.6	64	58	26
1920	10.3	16.3	1.23	7.79	52.6	33.4	85	76	35
1921	10.1	13.6	.988	7.24	42.8	33.0	77	67	32
1922	10.4	13.4	1.71	6.87	41.5	30.7	76	66	32
1923	11.7	15.6	2.94	6.05	40.1	36.0	83	72	35
1924	11.0	14.4	1.45	7.61	39.0	40.0	84	71	35
1925	10.8	14.0	1.68	6.64	39.6	41.3	82	69	34
1926	12.6	14.6	1.45	10.7	40.1	42.5	94	77	38
1927	12.7	13.9	1.74	10.0	44.4	37.0	90	75	37
1928	11.9	15.1	1.05	10.0	46.3	38.7	91	77	37
1929	12.6	14.8	1.36	8.06	49.4	36.3	88	77	37
1930	10.0	16.6	1.90	8.94	43.8	35.7	86	74	35
1931	10.1	17.7	1.02	9.88	51.2	30.2	88	78	36
1932	11.1	18.1	1.42	8.85	40.7	25.6	84	75	35
1933	11.9	16.7	1.17	11.9	41.6	20.7	86	75	36
1934	6.2	16.0	1.15	9.16	39.1	24.7	71	63	28
1935	4.2	14.9	.648	9.82	56.9	22.6	69	63	27
1936	6.1	16.6	1.13	10.2	56.6	23.2	76	69	30
1937	7.4	15.2	1.11	7.43	53.8	24.0	72	67	30
1938	7.0	14.5	.986	8.87	55.9	22.0	72	66	29
1939	6.3	13.4	.523	10.0	51.0	22.8	70	62	28
1940	3.9	15.3	.947	8.29	53.8	22.2	66	61	26
1941	4.6	13.9	1.72	7.81	63.1	24.4	67	63	26
1942	4.6	17.4	1.30	4.78	71.0	27.6	71	68	29
1943	3.4	28.1	.95	6.58	71.0	26.6	87	88	35
1944	3.9	32.2	.93	8.89	74.5	28.2	100	98	39
1945	7.5	24.8	1.13	11.5	78.8	28.3	100	95	40
1946	11.7	31.2	1.41	14.5	92.0	35.5	129	121	53
1947	13.3	37.0	1.82	19.5	107.5	45.1	157	144	63
1948	17.4	34.9	1.33	20.4	110.1	48.9	166	150	68
1949	18.6	43.9	2.76	20.7	109.6	48.5	182	168	75
1950	22.0	41.0	2.87	23.1	105.4	44.9	186	168	77
1951	22.7	43.7	3.47	24.9	102.1	46.8	195	174	80
1952	19.1	43.2	2.38	21.5	104.2	45.0	181	165	74
1953	19.4	40.5	3.65	24.4	110.6	43.7	182	165	74
1954	16.9	38.6	6.85	24.8	116.4	41.9	175	159	71
1955	20.8	38.6	3.61	24.3	108.0	46.7	183	164	75
1956	20.1	47.0	4.57	23.1	114.7	57.1	199	181	81
1957	18.9	49.0	7.83	21.4	94.5	55.0	193	174	79

MP-27, SOURCES

COL. A, Limestone

1889. See discussion in Table MO-23, Worksheet 1.

1902. Extrapolated from 1906 by price of slate shingles. (Extrapolation by price of nondimension limestone or general wholesale price index would have yielded identical results.)

1906-16 (first figure). Average price of dimension limestone, U.S., extrapolated from 1916 to 1906 by prices of Indiana (Bedford district) limestone, with rough building stone, dressed building stone, and other dimension limestone treated separately. This series excludes rubble. Source, *Mineral Resources,* Part II, for the various years.

1916 (second figure)-39. Barger & Schurr, Table A-1, (15) Dimension stone: (B) Dimension limestone, price (includes rubble).

1940-57. Various *Minerals Yearbooks,* stone chapters, table on limestone (dimension stone) sold or used by producers in the U.S., by state and use, total, average unit value.

COL. B, Granite

1889. See discussion in Table MO-23, Worksheet 2.

1902. Extrapolated from 1904 by price of slate shingles.

1904-05. Extrapolated from 1906 by price of paving blocks (of granite).

1906-16 (first figure). Average price of dimension granite in Maine, Minnesota, New Hampshire, Vermont, and Wisconsin, linked to 1916 U.S. price (excluding rubble). Source, *Mineral Resources,* Part II, for the various years.

1916 (second figure)-39. Barger & Schurr, *loc. cit.:* (A) Dimension granite, price (includes rubble).

1940-57. Various *Minerals Yearbooks,* stone chapters, table on granite (dimension stone) sold or used by producers in U.S., by state and use, total, average unit value.

COL. C, Basalt

1916-39. Barger & Schurr, Table A-1, (16) Nondimension stone: (B) Dimension basalt, price.

1940-57. Various *Minerals Yearbooks,* stone chapters, table on basalt and related rocks (traprock) (dimension stone) sold or used by producers in the U.S., by state and use, total, average unit value.

COL. D, Sandstone

1889. Estimated from Census; see Table MO-23, Worksheet 3.

1902, 1904-16 (first figure). U.S. average value (*Min. Resources 1916,* Part II), extrapolated with granite prices (Col. B) (1916: sandstone (4.68)/granite (8.33) = .5618).

1916 (second figure)-39. Barger & Schurr, Table A-1, (15) (E) Dimension sandstone, price.

1940-57. Various *Minerals Yearbooks,* stone chapters, table on sandstone (dimension stone) sold or used by producers in the U.S., by state and use, total, average unit price.

COL. E, Marble

1889. Estimated from Census; see Table MO-23, Worksheet 4.

1902. Estimated from value of output by states; see Table MO-22, Worksheet 1.

1906. Extrapolated from 1907 by weighted average of Vermont and Georgia prices (in 1911, these states produced about 67% of all dimension marble).

1907-08. Extrapolated from 1911, using weighted average of Vermont, Georgia, and Tennessee prices (in 1911, produced about 80% of dimension marble).

1909. Guess, based on distribution of value of output among these states, and comparison with 1908 and 1911 prices.

1911. *Min. Resources 1911,* Part II, p. 781, average value of marble sold by the cubic foot, except for 1,510,000 cubic feet sold at 10.6 cents per cubic foot or $1.25 per ton.

1912-39. Barger & Schurr, Table A-1, (15) (C) Dimension marble, price.

1940-57. Various *Minerals Yearbooks,* stone chapters, table on dimension stone sold or used by producers in U.S. by kinds and uses—marble, total value/total quantity.

COL. F, Slate

1879-98. Extrapolated from 1899 by price of roofing slate, from *Min. Resources 1912,* Part II, p. 682 (linked by 1899-1903 average ratio, 3.24).

1899-39. Barger & Schurr, Table A-1 (15) (F) Dimension slate, price.

1940-57. Various *Minerals Yearbooks,* stone chapters, slate as dimension stone, value/approx. short tons.

COL. G, Price index. Aggregate value of 1902 outputs of all kinds of dimension stone (output quantities from Table MO-23).

COL. H, Price index. Aggregate value of 1929 outputs of all kinds of dimension stone (output quantities from Table MO-23).

COL. I, Price index. Aggregate value of 1954 outputs of all kinds of dimension stone (output quantities from Table MO-23).

MP-27, NOTES

( ) Interpolation (straight line).

[a] Rough estimate (see Table MO-23, Worksheets 1-4).

[b] Excludes rubble.

[c] Includes rubble.

The fact that we have not used a link or correction factor for the limestone and granite series at 1916, where series excluding rubble meet series including rubble as dimension stone, tends to make the figures for the earlier years somewhat too high relative to those for the later years. There are other variations in average degree of fabrication, however, which probably impair the homogeneity of the series even more. Much fabrication is done in quarries and by quarry establishments, and the average extent of it appears to vary considerably over time.

MP-28. CRUSHED AND BROKEN STONE: Price

	Limestone	Granite	Basalt	Sandstone	Marble	Slate	Miscellaneous	BLS, crushed stone (1926 = 100)	Total ($ mil.) 1902 weights	1929 weights	1954 weights
	(dollars per short ton)										
	A	B	C	D	E	F	G	H	I	J	K
1889	[a].42	[a].60		[a].60					[a]23	[a]68	[a]154
1902	.473	[a].66		[a].55					25	75	171
1903	.494			[a].58							
1904	.493			[a].56							
1905	.494	.69	.67	.58					26	79	178
1906	.503	.63	.72	.65					27	80	181
1907	.550	.65	.68	.68					28	85	193
1908	.550	.67	.68	.70					29	86	194
1909	.540	.664	.668	.655			.668		28.0	84.0	190
1910	.513	.638	.668	.697			.668		27.0	81.0	184
1911	.521	.587	.684	.659	1.95		.684		27.1	81.6	185
1912	.507	.637	.707	.689	.895		.707		26.8	81.1	183
1913	.511	.669	.713	.760	1.19		.713	50.8	27.4	82.3	186
1914	.535	.645	.708	.718	.889		.708	52.9	28.0	84.3	191
1915	.521	.618	.672	.708	.980		.672	45.7	27.2	81.7	185
1916	.551	.635	.745	.715	1.54		.745	49.8	28.8	86.9	197
1917	.669	.802	.824	.938	1.83		.824	63.0	35.0	104	236
1918	.880	1.09	1.12	1.20	1.75	2.87	1.12	90.5	46.0	138	313
1919	.988	1.22	1.21	1.22	1.68	5.70	1.62	96.1	52.0	157	356
1920	1.15	1.52	1.33	1.44	2.39	7.62	1.53	107.7	60.7	181	409
1921	1.11	1.35	1.35	1.36	2.34	6.03	1.27	108.6	57.7	172	390
1922	.962	1.27	1.25	1.21	2.56	5.73	1.22	95.4	51.0	152	345
1923	.968	1.21	1.25	1.22	2.59	7.07	1.20	93.1	51.4	153	346
1924	.986	1.24	1.26	1.40	3.36	6.20	1.16	98.3	52.8	156	353
1925	.967	1.13	1.24	1.26	2.96	6.45	1.16	98.7	51.1	152	343
1926	.978	1.14	1.23	1.20	3.08	6.04	1.20	100.0	51.2	153	346
1927	.948	1.16	1.31	1.09	2.96	6.04	.951	101.7	49.8	149	336
1928	.937	1.17	1.29	1.19	2.30	5.96	.870	165.8	49.6	147	332
1929	.934	.971	1.27	1.12	2.33	5.82	.948	185.2	48.5	144	326
1930	.930	.962	1.17	1.15	2.89	5.85	.944	190.6	48.2	143	323
1931	.924	1.10	1.10	1.02	2.58	5.71	.951	183.2	47.6	142	321
1932	.884	.947	.951	.913	1.44	5.71	.684	168.4	44.4	131	297
1933	.837	.856	.892	1.13	2.18	6.33	.807	183.4	43.5	127	286
1934	.881	.993	.968	1.07	1.84	6.42	.866	98.7	45.6	134	303
1935	.839	1.01	.964	1.23	2.48	5.78	.892	98.7	44.6	130	295
1936	.882	.798	.955	1.32	3.37	5.69	.990	98.7	46.0	134	303
1937	.912	1.03	.921	1.20	2.86	5.70	.863	93.3	47.1	137	312
1938	.955	1.14	.883	1.07	2.11	7.13	.810	93.1	48.7	142	322
1939	.883	1.12	.882	1.13	3.68	7.34	.841	93.1	46.4	135	306
1940	.885	1.13	.966	1.12	2.66	7.22	.744	93.1	46.5	135	306
1941	.94	1.05	1.04	1.26	3.88	7.10	.77	93.1	49.2	143	323
1942	.96	1.09	1.19	1.16	3.79	7.04	.56	95.7	49.9	145	329
1943	.98	1.14	1.23	1.42	4.23	7.39	.51	95.9	52.1	149	339
1944	1.02	1.13	1.22	1.63	5.03	7.88	.57	95.9	54.6	156	353
1945	1.06	1.09	1.18	1.84	5.19	7.65	.63	95.9	56.7	160	364
1946	1.12	1.21	1.26	2.22	6.54	8.18	.68	101.6	61.4	172	390
1947	1.20	1.25	1.31	1.95	7.15	8.66	.81	107.7	63.8	182	411
1948	1.23	1.26	1.45	1.96	6.81	9.13	.87	112.8	65.6	188	425
1949	1.29	1.29	1.42	2.27	8.28	9.48	.81	117	69.3	196	443
1950	1.30	1.34	1.50	2.00	8.58	9.81	.88	118	69.1	198	447
1951	1.32	1.36	1.46	2.09	10.27	10.07	.85	121	70.3	200	453
1952	1.36	1.38	1.56	2.10	10.80	10.31	.86	121	72.3	206	467
1953	1.35	1.37	1.54	2.37	9.96	10.91	1.08	125	73.2	208	471
1954	1.28	1.41	1.60	2.17	8.68	10.85	1.08	128	70.1	201	453
1955	1.29	1.41	1.59	2.08	7.43	10.22	1.13	130	69.8	201	454
1956	1.31	1.38	1.65	2.49	7.46	9.24	1.04	132	71.9	205	463
1957	1.34	1.21	1.65	2.37	7.56	8.62	1.15	136	71.9	206	466

MP-28, SOURCES

COL. A. Limestone

1889. 1902 price extrapolated by price of limestone flux (*1889 Census*, p. 632).

1902-15. Table MO-22, Worksheet 2 (original data from *Mineral Resources* volumes).

1916-39. Barger & Schurr, Table A-1, (15) (D) Nondimension limestone (incl. limestone used for lime), price.

1940-57. Various *Minerals Yearbooks*, stone chapters, table on limestone (crushed and broken stone) sold or used by producers in the U.S., by states and uses, total, average unit value.

COL. B. Granite

1889. Table MO-23, Worksheet 2 (introductory discussion).

1902. 1905 price extrapolated by price of limestone flux (cf. Table MO-22; Worksheet 2).

1905-08. 1909 price extrapolated by price of crushed granite, from *Min. Resources 1905*, p. 1027, *1907*, Part II, p. 575, and *1909*, Part II, p. 578.

1909-39. Barger & Schurr, Table A-1, (15)(C) Nondimension granite, price; 1909-15 linked to later years by factor .8467 (1916: later series (.635)/earlier series (.750) = .8467).

1940-57. Various *Minerals Yearbooks*, stone chapters, table on granite (crushed and broken stone) sold or used by producers in the U.S., by states and uses, total, average unit value.

COL. C. Basalt

1889, 1902. See Col. B, above.

1905-08. 1909 price extrapolated by price of crushed basalt (source: see Granite, above).

1909-39. Barger & Schurr, Table A-1, (16) Nondimension stone: (A) Nondimension basalt, price; 1909-15 linked to later years by factor 1.026 (1916: later series (.745)/earlier series (.726) = 1.026).

1940-57. Various *Minerals Yearbooks*, stone chapters, table on basalt and related rocks (traprock) (crushed and broken stone) sold or used by producers in the U.S., by state and use, total, average unit value.

COL. D. Sandstone

1889. Table MO-23, Worksheet 3 (introductory discussion).

1902-04. Extrapolated from 1905 by price of limestone flux.

1905-08. Price of crushed sandstone (source: see Granite, above) linked to 1909 nondimension sandstone price.

1909-39. Barger & Schurr, Table A-1, (F) Nondimension sandstone price; 1909-15 linked to later years by factor, .9274 (1916: later series (.715)/earlier series (.771) = .9274).

1940-57. Various *Minerals Yearbooks*, stone chapters, table on sandstone (crushed and broken stone) sold or used by producers in the U.S., by states and uses, total, average unit value.

COL. E. Marble

1911-39. Barger & Schurr, Table A-1, (15) Dimension stone: (D) Nondimension marble, price.

1940-57. Various *Minerals Yearbooks*, stone chapters, table on marble (crushed and broken) sold by producers in the U.S., by states, total, average unit value.

COL. F. Slate

1918-39. Barger & Schurr, Table A-1, (15) (G) Nondimension slate, price.

1940-57. Various *Minerals Yearbooks*, stone chapters, table on crushed and broken stone sold or used by producers in the U.S., by principal use: slate granules and flour, average unit value.

COL. G. Miscellaneous stone

1909-17. Extrapolated by linking to basalt (Col. C) at 1918 (ratio, 1.00).

1918-39. Barger & Schurr, Table A-1, (16) (G) Miscellaneous nondimension stone, price.

1940-57. Various *Minerals Yearbooks*, stone chapters, table on miscellaneous varieties of stone (crushed and broken stone) sold or used by producers in the U.S., by states and uses, total, average unit value.

COL. H. BLS *Wholesale Prices* Bulls., "Crushed stone: price at New York, 1½ inch maximum" (codes 581 and 13-20-21); index, 1926 = 100.

COL. I. Price index. Aggregate value of 1902 outputs of all kinds of crushed and broken stone (quantities from Table MO-22).

COL. J. Price index. Aggregate value of 1929 outputs of all kinds of crushed and broken stone (quantities from Table MO-22).

COL. K. Price index. Aggregate value of 1954 outputs of all kinds of crushed and broken stone (quantities from Table MO-22).

MP-28, NOTES

[a] Rough estimate (see Table MO-23, Worksheets 1-4).

The BLS series appears clearly to be defective for the period 1928-33; perhaps there was a local monopoly in New York. Its long-term trend is fairly similar to those of our average unit value indexes, derived from *Minerals Yearbook* data.

MP-29. PORTLAND CEMENT: Price

	BLS (1947-49 = 100)	Minerals Yearbook ($ per barrel)	Col. A / Col. B	Col. B × 46.01	Preferred series, U. S. average (1947-49 = 100)
	A	B	C	D	E
1880		3.00		138	138
1881		2.50		115	115
1882		2.25		104	104
1883		2.15		98.9	98.9
1884		2.10		96.6	96.6
1885		1.95		89.7	89.7
1886		1.95		89.7	89.7
1887		1.95		89.7	89.7
1888		1.95		89.7	89.7
1889		1.67		76.8	76.8
1890		2.09		96.2	96.2
1891		2.13		98.0	98.0
1892		2.11		97.1	97.1
1893		1.96		90.2	90.2
1894		1.73		79.6	79.6
1895	57.2	1.60	35.8	73.6	73.6
1896	58.1	1.57	37.0	72.2	72.2
1897	57.1	1.61	35.5	74.1	74.1
1898	58.1	1.62	35.9	74.5	74.5
1899	59.5	1.43	41.6	65.8	65.8
1900	62.7	1.09	57.5	50.2	50.2
1901	54.9	.99	55.5	45.5	45.5
1902	56.6	1.21	46.8	55.7	55.7
1903	58.9	1.24	47.5	57.1	57.1
1904	42.4	.88	48.2	40.5	40.5
1905	41.4	.94	44.0	43.2	43.2
1906	45.8	1.13	40.5	52.0	52.0
1907	47.8	1.11	43.1	51.1	51.1
1908	42.4	.85	49.9	39.1	39.1
1909	41.0	.813	50.4	37.4	37.4
1910	42.0	.891	47.1	41.0	41.0
1911	42.5	.844	50.4	38.8	38.8
1912	38.2	.813	47.0	37.4	37.4
1913	46.3	1.005	46.1	46.2	46.3
1914	42.7	.927	46.1	42.7	42.7
1915	39.6	.860	46.0	39.6	39.6
1916	50.7	1.10	46.0	50.7	50.7
1917	62.3	1.35	46.0	62.3	62.3
1918	73.4	1.60	45.9	73.5	73.4
1919	78.7	1.71	46.0	78.7	78.7
1920	91.0	2.02	45.0		91.0
1921	86.0	1.89	45.5		86.0
1922	80.4	1.76	45.7		80.4
1923	83.8	1.90	44.1		83.8
1924	82.1	1.81	45.4		82.1
1925	79.7	1.77	45.0		79.7
1926	79.0	1.71	46.2		79.0
1927	75.4	1.62	46.5		75.4
1928	73.1	1.57	46.6		73.1
1929	70.4	1.48	47.6		70.4
1930	71.0	1.44	49.3		71.0
1931	59.1	1.11	53.2		59.1
1932	58.7	1.01	58.1		58.7
1933	69.6	1.33	52.3		69.6
1934	73.6	1.54	47.8		73.6
1935	73.3	1.51	48.5		73.3
1936	72.9	1.51	48.3		72.9
1937	70.4	1.48	47.6		70.4
1938	71.4	1.45	49.2		71.4
1939	72.2	1.47	49.1		72.2
1940	71.8	1.46	49.2		71.8
1941	72.7	1.47	49.5		72.7
1942	74.3	1.53	48.6		74.3
1943	74.2	1.57	47.3		74.2
1944	75.7	1.59	47.6		75.7
1945	78.6	1.63	48.2		78.6
1946	82.3	1.72	47.8		82.3
1947	91.3	1.90	48.1		91.3
1948	103	2.18	47.2		103
1949	106	2.30	46.1		106
1950	108	2.35	46.0		108
1951	116	2.54	45.7		116
1952	116	2.54	45.7		116
1953	122	2.67	45.7		122
1954	127	2.76	46.0		127
1955	131	2.86	45.8		131
1956	140	3.05	45.9		140
1957	147	3.18	46.2		147

MP-29, SOURCES

COL. A

1895-1912. BLS *Wholesale Prices* Bull. 320, at New York, spliced to series below with average ratio, 1913-21.

1913-25. BLS *Wholesale Prices* Bull. 493, U.S. average for 1913-19 and average for six plants, 1920-25, spliced to series below with average ratio, 1926-28.

1926-55. BLS mimeo (Series 13-20-30, changed to 13-22 in 1953), U.S. average.

1956. BLS *Wholesale Prices* Bull. 1214.

1957. *BLS Wholesale Prices* Bull. 1235.

COL. B, *Hist. Stat. 1960,* series M-179, and *Min. Yearbook 1959,* Vol. I, p. 304, average unit value of portland cement.

COL. C, Ratio, Col. A/Col. B.

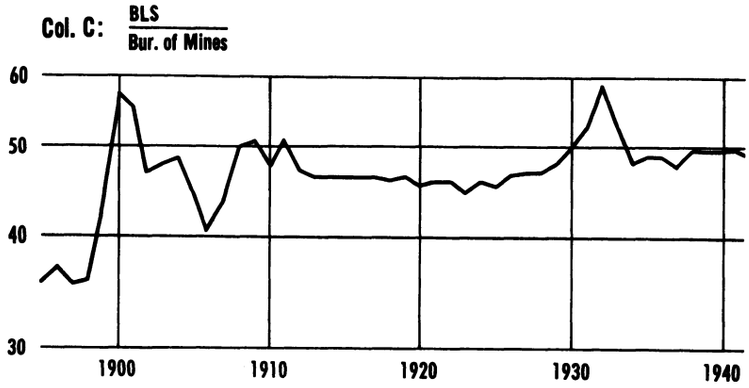
COL. D, Col. B times the average of the ratios in Col. C for 1913 through 1919 (ratio, 46.01).

COL. E, Preferred series

1880-1912. Col. D, transcribed.

1913-57. Col. A, transcribed.

MP-29, NOTES



MP-30. LIME: Price

	Aldrich report ($ per barrel)	BLS (1926 = 100)	Col. A × 44.82	Hist. Stat., average value ($ per short ton)	Preferred series (1926 = 100)
	A	B	C	D	E
1870	1.29		57.8		57.8
1871	1.49		66.8		66.8
1872	1.49		66.8		66.8
1873	1.45		65.0		65.0
1874	1.12		50.2		50.2
1875	1.29		57.8		57.8
1876	.92		41.2		41.2
1877	.80		35.9		35.9
1878	.70		31.4		31.4
1879	.89		39.9		39.9
1880	.89		39.9		39.9
1881	.98		43.9		43.9
1882	.99		44.4	7.00	44.4
1883	1.02		45.7	6.00	45.7
1884	.96		43.0	5.00	43.0
1885	.96		43.0	5.00	43.0
1886	.96		43.0	5.00	43.0
1887	.82		36.8	5.00	36.8
1888	.84		37.6	5.00	37.6
1889	.96		43.0	4.42	43.0
1890	.92	41.8	41.2		41.8
1891	.88	38.9	39.4		38.9
1892		39.7			39.7
1893		39.7			39.7
1894		36.2			36.2
1895		33.4			33.4
1896		29.6			29.6
1897		30.7			30.7
1898		31.6			31.6
1899		34.0			34.0
1900		29.2			29.2
1901		33.0			33.0
1902		34.4			34.4
1903		33.6			33.6
1904		35.2		3.68	35.2
1905		38.0		3.67	38.0
1906		40.4		3.90	40.4
1907		40.5		4.09	40.5
1908		44.6		4.01	44.6
1909		44.6		3.98	44.6
1910		44.6		4.02	44.6
1911		47.3		4.03	47.3
1912		46.3		3.96	46.3
1913		46.0		4.07	46.0
1914		45.2		3.92	45.2
1915		44.2		3.98	44.2
1916		54.0		4.54	54.0
1917		68.8		6.29	68.8
1918		88.2		8.36	88.2
1919		100		8.84	100
1920		121		10.52	121
1921		109		9.83	109
1922		98.6		9.14	98.6
1923		109		9.81	109
1924		107		9.72	107
1925		104		9.30	104
1926		100		9.11	100
1927		98.2		8.75	98.2
1928		95.4		8.18	95.4
1929		88.9		7.84	88.9
1930		88.4		7.56	88.4
1931		85.4		6.90	85.4
1932		77.2		6.28	77.2
1933		78.4		6.28	78.4
1934		80.6		7.16	80.6
1935		80.2		7.28	80.2
1936		79.0		7.18	79.0
1937		79.3		7.30	79.3
1938		79.6		7.21	79.6
1939		79.0		7.06	79.0
1940		77.6		6.95	77.6
1941		79.0		7.06	79.0
1942		84.1		7.27	84.1
1943		84.2		7.44	84.2
1944		84.2		7.52	84.2
1945		85.3		7.76	85.3
1946		90.0		8.52	90.0
1947		98.5		9.42	98.5
1948		104		10.35	104
1949		114		10.97	114
1950		114		11.13	114
1951		121		11.74	121
1952		122		11.80	122
1953		124		11.59	124
1954		128		11.79	128
1955		130		12.13	130
1956		139		12.83	139
1957		148		13.17	148

MP-30, SOURCES

Col. A, Aldrich report, Vol. III, Part 2, p. 227, average of quarterly prices, Rockland lime, per barrel.

Col. B, BLS *Wholesale Prices* Bulls. (1926 = 100):

1890-1913. Rockport.

1913-20. Common lump f.o.b. plant average, U.S.

1921-28. 15 plants average price.

1929-43. Series 570: Lime, building, common, per ton (composite price).

1944-48. Series 570: f.o.b. plant.

1949-57. Series 06-11-29: Calcium oxide, common (lump lime).

Col. C, Col. A times the average of the ratios of Col. B to Col. A for 1890 and 1891 (ratio, 44.82).

Col. D

1882-88. *Hist. Stat. 1960*, series M-181.

1889. Calculated from value and quantity in *1890 Census of Mineral Industries*, p. 632.

1904-56. *Hist. Stat. 1960*, series M-181.

1957. *Min. Yearbook 1957*, Vol. I, p. 744.

Col. E, Preferred series

1870-89. Col. C, transcribed.

1890-1957. Col. B, transcribed.

MP-30, NOTES

Col. C. In absolute terms the prices from the BLS Bulletin for 1890 and 1891 are $.979 and $.913 per barrel, prices which are about 6% and 4% above those of the Aldrich report (Col. A).

Col. D. The lime price series in *Historical Statistics* represents the average value f.o.b. plant of all types of lime.

MP-31. SAND: Price

	Barger & Schurr ($ per ton)	Col. A / Col. C × 100	Preferred series, price index (1926 = 100)
	A	B	C
1905	.502		
1906	.411		
1907	.385		
1908	.391		
1909	.348		
1910	.374		
1911	.359		
1912	.398		
1913	.375	.625	60.0
1914	.361	.593	60.9
1915	.350	.612	57.2
1916	.409	.682	60.0
1917	.533	.722	73.8
1918	.736	.779	94.5
1919	.734	.689	106
1920	.895	.735	122
1921	.759	.693	110
1922	.714	.750	95.2
1923	.720	.735	98.0
1924	.646	.631	102
1925	.637	.639	99.7
1926	.604	.604	100
1927	.580	.622	93.3
1928	.576	.572	101
1929	.618	.670	92.3
1930	.598	.646	92.6
1931	.570	.641	88.9
1932	.529	.623	84.9
1933	.607	.687	88.4
1934	.682	.686	99.4
1935	.664	.673	98.7
1936	.635	.647	98.2
1937	.677	.660	102
1938	.655	.642	102
1939	.635	.637	99.7
1940			98.3
1941			99.9
1942			105
1943			106
1944			107
1945			109
1946			110
1947			123
1948			135
1949			141
1950			142
1951			150
1952			150
1953			155
1954			159
1955			164
1956			169
1957			176

MP-31, SOURCES

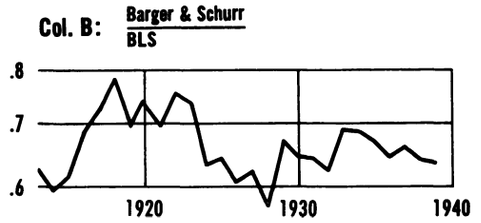
COL. A, Barger & Schurr, Table A-1, (17) (A) Average unit value.

COL. B, Ratio, Col. A/Col. C.

COL. C, Preferred series. BLS *Wholesale Prices* Bulls., "Price for construction sand," series 579, 13-20-01, and 13-21-01.

MP-31, NOTES

COL. B. The chart shows the ratio of an average unit value series to a specific market price. The relative movements make splicing questionable.



COL. C. The BLS series changed specifications in 1947. Both the old and the new series are available for 1947 and 1948 and show for these years percentage increases of 9.6 and 8.1 respectively. The two series have been spliced on the basis of the average ratio for 1947-48.

Construction sand is ubiquitous. It is difficult to obtain a meaningful price series because of the wide range in prices.

MP-32. GRAVEL: Price

	Barger & Schurr, average value (¢ per ton)	Col. A / Col. C (× 100)	Preferred series, price (1926 = 100)
	A	B	C
1905	.407		
1906	.312		
1907	.262		
1908	.290		
1909	.246		
1910	.223		
1911	.253		
1912	.260		
1913	.230	.437	52.6
1914	.240	.434	55.3
1915	.253	.432	58.6
1916	.265	.452	58.6
1917	.380	.536	70.9
1918	.472	.518	91.2
1919	.565	.558	101.3
1920	.692	.588	117.7
1921	.660	.617	106.9
1922	.645	.680	94.9
1923[a]	[a].585 and .583	[a].579 and .577	101.1
1924	.595	.578	102.9
1925	.623	.614	101.4
1926	.621	.621	100.0
1927	.589	.608	96.8
1928	.563	.585	96.3
1929	.596	.619	96.3
1930	.615	.669	91.9
1931	.615	.693	88.8
1932	.582	.700	83.1
1933	.586	.685	85.5
1934	.609	.668	91.2
1935	.558	.623	89.6
1936	.575	.633	90.8
1937	.593	.630	94.2
1938	.581	.623	93.2
1939	.569	.623	91.4
1940			90.0
1941			91.6
1942			96.2
1943			96.7
1944			97.1
1945			98.7
1946			100.6
1947			109.4
1948			118.7
1949			122.7
1950			124.6
1951			131.0
1952			131.5
1953			134.8
1954			138.5
1955			143.1
1956			150.8
1957			156.2

MP-32, SOURCES

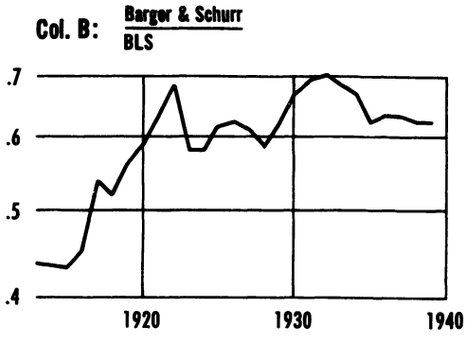
COL. A, Barger & Schurr, Table A-1 (17) (B) Average unit value, gravel.

COL. B, Ratio, Col. A/Col. C.

COL. C, Preferred series. BLS *Wholesale Prices* Bulls., series 569, 13-20-11 (1947-54), and 13-21-11 (in 1955-57), "price for gravel for concrete" (two later series, 1947-49 = 100, spliced to first, 1926 = 100 (ratio, 1.169)).

MP-32, NOTES

[a] The first 1923 figure and earlier years include noncommercial production; the second 1923 figure and subsequent years exclude noncommercial.



COL. C. The BLS series changed specifications in 1947, from building gravel, 27-plant average, to gravel for concrete, 1½ inch maximum. Both series are available for the years 1947 and 1948. The percent increases in the price relatives differ by about 2%, the early series rising 8.5% and the latter rising 6.6%. The two series have been spliced on the basis of the average of the ratios.

The major discrepancy in movements of the BLS and Barger & Schurr series occurs during the first World War when both prices were rising rapidly. The differences are substantial, so we do not link the two.

A homogeneous representative series for gravel prices is not altogether possible. Gravel is ubiquitous and its price is dictated more by local labor costs and other local factors than is the case for other resources. Average unit values in 1952 for noncommercial paving gravel vary from $.09 to $1.08 per ton among the ten most important states. Shifts in construction centers over time make an average unit value series more unreliable than a specific market price or a price series weighted by fixed weights such as the BLS series.

MP-33. CLAYS: Price

	Kaolin	Ball clay	Fire and stoneware clay	Fuller's earth	Bentonite	All clays, price ($ mil.)		
						1902 weights	1929 weights	1954 weights
	(dollars per short ton)							
	A	B	C	D	E	F	G	H
1902	5.22	3.39	.99	8.54		1.93	9.03	25.6
1903	7.12	2.37	1.24	9.20		2.37	10.9	32.0
1904	5.20	3.08	1.20	5.72		2.09	8.78	25.1
1905	5.24	2.72	1.24	8.52		2.15	9.77	26.8
1906	5.57	3.67	1.33	8.28		2.33	10.3	28.4
1907	5.57	3.73	1.37	8.88		2.37	10.6	28.9
1908	5.66	3.28	1.30	9.37		2.30	10.5	28.9
1909	5.57	4.36	1.39	9.01		2.43	10.8	29.5
1910	5.63	3.64	1.29	8.95		2.29	10.4	28.8
1911	5.33	3.39	1.36	9.41		2.32	10.6	28.5
1912	5.10	3.50	1.36	9.34		2.30	10.4	28.1
1913	5.18	3.54	1.39	9.58		2.35	10.7	28.5
1914	5.60	3.77	1.47	9.85		2.49	11.2	30.2
1915	5.54	4.01	1.46	10.2		2.50	11.3	30.3
1916	5.35	4.36	1.75	10.4		2.78	12.3	31.8
1917	6.13	5.30	2.36	10.6		3.55	14.9	37.9
1918	8.12	6.57	2.43	13.6		3.97	17.2	45.7
1919	9.66	8.01	2.59	18.8		4.46	20.4	54.2
1920	10.70	8.41	3.09	19.5		5.12	22.8	60.3
1921	9.70	6.56	2.92	18.7		4.72	21.2	55.5
1922	8.51	5.74	2.72	16.5		4.31	19.2	49.6
1923	8.69	6.40	2.84	15.1		4.46	19.3	50.4
1924	8.95	7.01	2.74	14.8		4.42	19.1	50.7
1925	8.77	6.38	2.83	14.2		4.45	19.0	50.0
1926	8.73	7.73	2.86	14.3		4.54	19.3	50.8
1927	8.39	7.63	2.83	14.2		4.47	19.0	49.6
1928	8.24	8.14	2.67	13.6		4.31	18.2	48.2
1929	8.26	8.35	2.54	13.6		4.19	17.9	47.6
1930	7.63	7.91	2.37	12.9	10.0	3.91	16.7	44.4
1931	6.65	7.71	2.53	10.6	8.22	3.91	16.0	44.0
1932	5.83	6.57	2.76	9.65	8.48	3.97	15.9	39.0
1933	5.75	6.20	2.76	9.28	8.46	3.94	15.6	38.6
1934	6.33	6.73	2.85	9.47	6.68	4.13	16.4	38.1
1935	7.19	6.55	2.53	9.79	6.65	3.91	15.8	38.3
1936	7.10	6.87	2.48	9.81	7.69	3.86	15.7	39.3
1937	7.31	7.33	2.58	10.2	7.71	4.03	16.3	40.4
1938	7.97	7.79	2.78	10.0	7.15	4.33	17.3	42.0
1939	7.94	7.28	2.61	10.1	7.75	4.13	16.7	41.9
1940	8.39	7.57	2.55	10.0	7.65	4.14	16.7	42.4
1941	8.46	8.45	2.44	10.2	6.93	4.08	16.6	41.5
1942	8.49	8.49	2.35	10.5	6.80	3.99	16.4	41.1
1943	8.68	8.60	2.38	10.8	6.24	4.05	16.7	41.1
1944	9.00	8.84	2.48	11.2	6.60	4.22	17.3	42.7
1945	9.65	9.11	2.52	11.7	6.57	4.36	18.0	44.4
1946	10.2	9.85	2.64	12.4	7.25	4.59	19.0	47.3
1947	12.0	10.9	2.77	14.2	7.79	5.02	21.0	52.9
1948	12.6	11.2	2.90	15.4	7.74	5.25	22.2	55.1
1949	13.4	12.3	2.91	16.2	8.00	5.43	23.0	57.5
1950	13.7	12.3	3.00	16.4	8.79	5.56	23.5	59.6
1951	13.6	10.8	3.22	16.8	10.7	5.71	24.1	62.4
1952	13.8	13.0	3.46	16.3	11.2	6.07	25.1	64.8
1953	14.4	11.3	3.14	17.5	12.7	5.76	24.6	66.6
1954	15.0	12.7	3.00	18.2	11.5	5.76	24.8	66.3
1955	14.7	13.1	3.13	20.6	11.6	5.91	25.9	67.3
1956	15.3	13.2	2.86	21.3	11.7	5.72	25.6	67.9
1957	16.3	13.5	3.20	22.0	12.3	6.21	27.4	72.2

MP-33, SOURCES

COL. A, Kaolin, including paper clay. *Mineral Resources* and *Minerals Yearbooks*, clay chapters, value divided by quantity.

COL. B, Ball clay. *Ibid.*

COL. C, Fire and stoneware clay

1902-24. *Mineral Resources*, clay chapters, value divided by quantity.

1925-43. *Mineral Facts & Prob.*, p. 195, Table 5, fire clay, including stoneware clay, sold or used by producers in the United States, value divided by quantity.

1944-57. *Minerals Yearbooks*, clay chapters, value of fire and stoneware clay sold by producers divided by quantity.

COL. D, Fuller's earth

1902-04. *Min. Resources 1904*, p. 1122, table on production of fuller's earth in the U.S., 1895-1904.

1905-24. Barger & Schurr, Table A-1, (18) (D), price.

1925-52. *Mineral Facts & Prob.*, p. 199, Table 9, fuller's earth sold or used by producers in the United States, 1925-53, value divided by quantity.

1953-57. *Minerals Yearbooks*, clay chapters, value divided by quantity.

COL. E, Bentonite

1930-52. *Mineral Facts & Prob.*, p. 198, Table 8, Bentonite sold or used by producers in the United States, 1930-53, value divided by quantity.

1953-57. *Minerals Yearbooks*, clay chapters, value divided by quantity.

COLS. F, G, H. Sums of prices in Cols. A through E, multiplied by the following weights, representing output in the respective years, in thousands of tons:

	1902 weights	*1929 weights*	*1954 weights*
Kaolin, incl. paper clay	124	518	1,873
Ball clay	50.5	118	328
Fire and stoneware clay	1,018	3,266	4,160
Fuller's earth	11.5	316	376
Bentonite	0	0	1,278

Source: Table MO-27, Cols. A to E.

MP-34. STRUCTURAL CLAY PRODUCTS: Price

(1947-49 = 100)

	BLS mimeo & Stat. Ab., structural clay products	Construction Vol. and Costs, brick and tile	Preferred series
	A	B	C
1915		25.6	25.6
1916		27.8	27.8
1917		32.9	32.9
1918		43.7	43.7
1919		60.2	60.2
1920		77.6	77.6
1921		69.2	69.2
1922		65.1	65.1
1923		67.9	67.9
1924		67.7	67.7
1925		65.6	65.6
1926	68.1	65.5	68.1
1927	64.9	62.7	64.9
1928	62.7	62.6	62.7
1929	61.0	61.8	61.0
1930	57.8	58.8	57.8
1931	53.9	54.8	53.9
1932	49.7	50.6	49.7
1933	51.8	51.9	51.8
1934	60.7	59.1	60.7
1935	58.8	58.6	58.8
1936	57.9	58.1	57.9
1937	60.8	61.2	60.8
1938	60.4	59.6	60.4
1939	61.5	59.9	61.5
1940	61.4	59.3	61.4
1941	65.2	61.4	65.2
1942	69.9	64.2	69.9
1943	66.6	64.9	66.6
1944	67.3	66.6	67.3
1945	75.1	73.6	75.1
1946	83.8	80.5	83.8
1947	93.3	91.7	93.3
1948	101	102	101
1949	105	106	105
1950	113	110	113
1951	121	118	121
1952	122		122
1953	128		128
1954	133		133
1955	140		140
1956	148		148
1957	154		154

MP-34, SOURCES

COL. A

1926-55. BLS mimeo, series 13-40-00, "Structural clay products."

1956-57. *Stat. Abstract 1958*, p. 330.

COL. B, Business and Defense Services Administration, Department of Commerce, and Bureau of Labor Statistics, Department of Labor, *Construction Volume and Costs, 1915-1954:* A Statistical Supplement to *Construction Review* (1955), p. 32, "Brick and tile."

COL. C, Preferred series

1915-25. Col. B, transcribed.

1926-57. Col. A, transcribed.

MP-34, NOTES

A recent revision by BLS has resulted in the replacement of the "Brick and tile" subgroup by the "Structural clay products" subgroup. The major components of both subgroups are bricks and tiles, in various forms. The older series (Col. B) also included concrete blocks. The revised series (Col. A) excludes concrete blocks and includes sewer pipe.

The relative movements and levels of the series appear sufficiently close to permit use of the old series to extend the revised series.

MP-35. BUILDING BRICK: Price

	Aldrich report (dollars per 1000)	BLS bull., average price (dollars per 1000)	BLS bull. (1926 = 100)	BLS bulls. (1947-49 = 100)	Preferred series (1926 = 100)
	A	B	C	D	E
1870	8.42				61.1
1871	9.19				66.7
1872	10.1				73.5
1873	8.19				59.5
1874	7.31				53.1
1875	7.12				51.7
1876	5.88				42.7
1877	4.94				35.9
1878	4.84				35.1
1879	5.03				36.5
1880	7.00				50.8
1881	7.50				54.4
1882	7.12				51.7
1883	8.28				60.1
1884	6.66				48.4
1885	6.19				44.9
1886	7.56				54.9
1887	7.44				54.0
1888	6.50				47.2
1889	7.06				51.3
1890	6.66	6.56			47.2
1891	5.53	5.71			41.1
1892		5.77			41.5
1893		5.83			41.9
1894		5.00			36.0
1895		5.31			38.2
1896		5.06			36.4
1897		4.94			35.5
1898		5.75			41.3
1899		5.69			40.9
1900		5.25			37.7
1901		5.77			41.5
1902		5.38			38.7
1903		5.91			42.5
1904		7.50			53.9
1905		8.10			58.2
1906		8.55			61.5
1907		6.16			44.3
1908		5.10			36.7
1909		6.38			45.9
1910		5.72			41.1
1911		5.89			42.3
1912		6.76			48.6
1913		6.56	48.8		48.8
1914		5.53	48.1		48.1
1915		6.05	48.4		48.4
1916		8.04	52.6		52.6
1917		8.88	64.3		64.3
1918		11.9	85.6		85.8
1919		16.0	100		101
1920		21.8	136		136
1921		15.2	113		113
1922		17.3	98.5		98.5
1923		19.8	104		104
1924		17.0	104		104
1925		14.7	101		101
1926		16.5	100		100
1927		13.9	101		101
1928		13.0	98.6		98.6
1929		10.7	97.9		97.9
1930		10.1	93.8		93.8
1931		10.0	89.1		89.1
1932		9.54	80.6		80.6
1933		9.19	79.4		79.4
1934		10.3	90.5		90.5
1935		9.74	88.7		88.7
1936		10.2	88.5		88.5
1937		10.8	90.9		90.9
1938		11.6	90.4		90.4
1939		12.1	90.8		90.8
1940		11.9	91.4		91.4
1941		12.0	94.9		94.9
1942		12.4	99.6		99.6
1943		13.2	101		101
1944			108		108
1945			120		120
1946			136		136
1947			150	91.1	151
1948			172	102	170
1949				106	177
1950				110	184
1951				118	196
1952				118	195
1953				119	198
1954				121	200
1955				125	208
1956				133	221
1957				135	224

MP-35, SOURCES

COL. A, Aldrich report, Vol. III, Part 2, p. 221, average of quarterly price for "common domestic building brick."

COL. B, BLS *Wholesale Prices* Bulls., average absolute price for common brick, red domestic at New York.

COL. C, BLS *Wholesale Prices* Bulls., average price relative to 1926=100 for U.S. (1913-19) and for 82 brickyards (1919-48).

COL. D, BLS *Wholesale Prices* Bull., series 13-41-01, building brick, clay, average for U.S.

COL. E, Preferred series.

1870-89. Col. A, linked to Col. E at 1890-91.

1890-1912. Col. B, linked to Col. C at 1913-21.

1913-46. Col. C, transcribed.

1947-57. Col. D, linked to Col. C at 1947-48.

MP-36. GYPSUM: Price

(dollars per ton)

	Sold crude	Sold crude for portland cement	Imported, unground	Preferred series
	A	B	C	D
1870			† .94	1.62
1871			† .88	1.51
1872			†1.05	1.81
1873			†1.03	1.77
1874			†1.05	1.81
1875			†1.23	2.12
1876			† .91	1.57
1877			†1.08	1.86
1878			†1.12	1.93
1879			†1.02	1.75
1880			†1.00	1.72
1881			†1.00	1.72
1882			† .99	1.70
1883			† .97	1.67
1884			†1.01	1.74
1885			†1.02	1.75
1886			† .95	1.63
1887			†1.11	1.91
1888			1.08	1.86
1889	1.74		1.05	1.74
1890	2.15		1.02	2.15
1891	2.08		1.17	2.08
1892	1.77		1.28	1.77
1893	1.91		1.10	1.91
1894	1.98		1.10	1.98
1895	2.00		1.12	2.00
1896	1.76		1.07	1.76
1897	1.72		1.09	1.72
1898	2.10			2.10
1899	1.55			1.55
1900	1.56			1.56
1901	1.42			1.42
1902	1.41			1.41
1903	1.63			1.63
1904	1.61			1.61
1905	1.68			1.68
1906	2.47			2.47
1907	1.93			1.93
1908	1.73	1.63		1.73
1909	1.62	1.55		1.62
1910	1.59	1.56		1.59
1911	1.52	1.48		1.52
1912	1.41	1.33		1.41
1913	1.51	1.47		1.51
1914	1.46	1.41		1.46
1915	1.37	1.30		1.37
1916	1.44	1.34		1.44
1917	1.80	1.65		1.80
1918	2.63	2.41		2.63
1919	2.98	2.83		2.98
1920	3.83	3.57		3.83
1921	3.52	3.30		3.52
1922	3.17	3.07		3.17
1923	3.04	2.95		3.04
1924	2.72	n.a.		2.72
1925	2.78	2.66		2.78
1926	2.61	2.50		2.61
1927	2.48	2.41		2.48
1928	[a]2.16	1.86		2.16
1929	[a]2.15	[a]1.94		2.15
1930	[a]2.15	1.81		2.15
1931	[a]2.21	1.91		2.21
1932	[a]2.36	1.95		2.36
1933	[a]2.22	1.78		2.22
1934	[a]2.19	1.75		2.19
1935	2.23	1.82		2.23
1936	2.25	1.93		2.25
1937	2.23	1.90		2.23
1938	2.22	1.84		2.22
1939	2.22	1.81		2.22
1940	2.42	1.95		2.42
1941	2.38	2.00		2.38
1942	2.33	2.04		2.33
1943	2.52	2.11		2.52
1944	2.80	2.10		2.80
1945	2.99	2.26		2.99
1946	3.11	2.60		3.11
1947	3.60	3.31		3.60
1948	3.56	3.31		3.56
1949	3.58	3.27		3.58
1950	3.57	3.23		3.57
1951	3.72	3.48		3.72
1952	3.55	3.43		3.55
1953	3.71	3.59		3.71
1954	3.86	3.75		3.86
1955	3.89	3.92		3.89
1956	4.04	4.02		4.04
1957	4.18	4.21		4.18

MP-36, SOURCES

Col. A, *Mineral Resources* and *Minerals Yearbook*, various volumes. Where they were separated, we have combined the quantities and values of gypsum "sold crude" and "ground and sold as land plaster [or soil conditioner]."

Col. B, *Ibid.*

Col. C, *Min. Resources 1897-98*, Part VI (continued), p. 583.

Col. D, Preferred series

1870-88. Col. C linked to Col. A at average ratio for 1889-97 (ratio, 1.72).

1889-1957. Col. A, transcribed.

MP-36, NOTES

† Years ended June 30.

[a] Figures revised some years after original publication.

MP-37. CHEMICALS AND ALLIED PRODUCTS: Price

	Warren & Pearson & BLS (1926 = 100)	BLS new series (1947-49 = 100)	Col. A / Col. B	Col. B × 1.404	Preferred series (1926 = 100)
	A	B	C	D	E
1870	161				161
1871	144				144
1872	142				142
1873	147				147
1874	143				143
1875	121				121
1876	114				114
1877	110				110
1878	103				103
1879	97.3				97.3
1880	97.3				97.3
1881	97.3				97.3
1882	92.4				92.4
1883	89.2				89.2
1884	85.1				85.1
1885	81.1				81.1
1886	80.3				80.3
1887	78.6				78.6
1888	83.5				83.5
1889	81.9				81.9
1890	73.2				73.2
1891	74.0				74.0
1892	74.6				74.6
1893	72.7				72.7
1894	65.5				65.5
1895	64.7				64.7
1896	65.0				65.0
1897	70.9				70.9
1898	77.4				77.4
1899	81.1				81.1
1900	82.1				82.1
1901	84.2				84.2
1902	86.5				86.5
1903	84.1				84.1
1904	84.1				84.1
1905	82.3				82.3
1906	76.8				76.8
1907	78.5				78.5
1908	79.6				79.6
1909	79.9				79.9
1910	82.0				82.0
1911	81.6				81.6
1912	80.7				80.7
1913	80.2				80.2
1914	81.4				81.4
1915	112				112
1916	161				161
1917	165				165
1918	182				182
1919	157				157
1920	165				165
1921	115				115
1922	100				100
1923	101				101
1924	98.9				98.9
1925	102				102
1926	100				100
1927	96.1				96.1
1928	95.0				95.0
1929	94.0				94.0
1930	88.7				88.7
1931	79.3				79.3
1932	73.9				73.9
1933	72.1	51.2	1.41	71.9	71.9
1934	75.3	53.7	1.40	75.4	75.4
1935	79.0	56.0	1.41	78.6	78.6
1936	78.7	56.4	1.40	79.2	79.2
1937	82.6	59.0	1.40	82.8	82.8
1938	77.0	55.9	1.38	78.5	78.5
1939	76.0	55.8	1.36	78.3	78.3
1940	77.0	56.6	1.36	79.5	79.5
1941	84.4	61.6	1.37	86.5	86.5
1942	95.5	69.3	1.38	97.3	97.3
1943	94.9	69.5	1.37	97.6	97.6
1944	95.2	70.2	1.36	98.6	98.6
1945	95.2	70.6	1.35	99.1	99.1
1946	101	76.3	1.33	107	107
1947	127	101	1.26	142	142
1948	136	104	1.31	146	146
1949	119	94.8	1.25	133	133
1950	123	96.3	1.27	135	135
1951	143	110	1.30	154	154
1952		104		147	147
1953		106		148	148
1954		107		150	150
1955		107		150	150
1956		107		150	150
1957		110		154	154

MP-37, SOURCES

COL. A

1870-89. Warren & Pearson, Table 42, linked with ratio to *Hist. Stat. 1949,* series L-23 (below) for 1890-94 (ratio, 0.8104).

1890-1951. *Hist. Stat. 1949,* series L-23 (source, BLS), and *Statistical Abstracts.*

COL. B, BLS, as given in *Bus. Stat. 1955,* p. 27, and BLS *Wholesale Prices* Bulls. 1214 and 1235.

COL. C, Ratio, Col. A/Col. B.

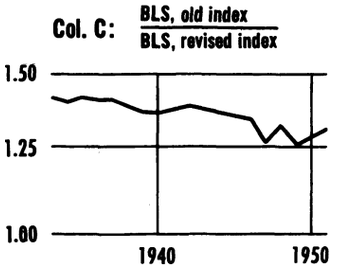
COL. D, Col. B times the average of the ratios in Col. C for 1933 through 1937 (ratio, 1.404).

COL. E, Preferred series

1870-1932. Col. A, transcribed.

1933-57. Col. D, transcribed.

MP-37, NOTES



The composition of chemicals and allied products has changed considerably over time. For 1870, Warren and Pearson used alum, blue vitriol, copperas, indigo, and sulfuric acid, each equally weighted. In the revised index, there are about 300 items, broken down into the following groups: industrial chemicals; paints and paint materials; drugs and pharmaceuticals; cosmetics and perfumes; fats and oils, inedible; mixed fertilizers; fertilizer materials; and others. Of these, industrial chemicals is the most important (relative importance of 37% in 1954).

MP-38. PHOSPHATE ROCK: Price

	BLS bulletins (1926 = 100)	WPA-NRP ($ per long ton)	Col. A / Col. B	Col. B × 31.05	Col. A / Col. F	Preferred series, Census & Bu. Mines, average value ($ per long ton)
	A	B	C	D	E	F
1880						5.33
1881						7.42
1882						6.00
1883						6.01
1884						5.50
1885						6.16
1886						4.29
1887						3.82
1888						4.51
1889						5.35
1890						6.30
1891						6.21
1892						4.83
1893						4.40
1894						3.49
1895						3.47
1896						3.01
1897						2.57
1898						2.64
1899						3.35
1900						3.59
1901						3.58
1902						3.15
1903						3.36
1904		4.16		129.2		3.51
1905		4.06		126.1		3.47
1906		4.75		147.5		4.12
1907		6.58		204.3		4.70
1908		4.24		131.7		4.78
1909		3.85		119.5		4.62
1910		3.86		119.9		4.11
1911		3.81		118.3		3.90
1912		3.75		116.4		3.93
1913	108.5	3.49	31.09	108.4	28.6	3.79
1914	95.5	3.12	30.61	96.9	27.2	3.51
1915	92.2	3.01	30.63	93.5	31.2	2.95
1916	87.6	2.84	30.84	88.2	29.4	2.98
1917	84.7	2.64	32.08	82.0	28.1	3.01
1918	134.6	4.21	31.97	130.7	40.8	3.30
1919	159.2	5.00	31.84	155.2	31.2	5.10
1920	290.6	9.20	31.59	285.6	47.6	6.11
1921	177.8	6.01	29.58	186.6	29.9	5.94
1922	97.7	3.12	31.31	96.9	22.5	4.34
1923	97.8	3.08	31.75	95.6	25.4	3.85
1924	73.4	2.31	31.77	71.7	20.6	3.57
1925	78.0	2.44	31.97	75.8	23.5	3.32
1926	100.0	3.18	31.45	98.7	29.5	3.39
1927	95.9	3.09	31.04	95.9	27.0	3.55
1928	96.8	3.12	31.03	96.9	27.3	3.55
1929	98.7	3.18	31.04	98.7	28.2	3.50
1930	98.7	3.18	31.04	98.7	27.6	3.57
1931	98.7	3.18	31.04	98.7	27.0	3.66
1932	98.7	3.18	31.04	98.7	29.4	3.36
1933	95.1	3.11	30.58	96.6	30.1	3.16
1934	97.5	3.14	31.05	97.5	27.5	3.54
1935	104.7	3.15	33.24	97.8	29.1	3.60
1936	58.9	1.85	31.84	57.4	17.3	3.40
1937	58.9	1.85	31.84	57.4	18.0	3.28
1938	58.9				17.0	3.46
1939	60.5				18.5	3.27
1940	59.7				19.4	3.08
1941	64.8				19.5	3.33
1942	77.9				21.8	3.57
1943	74.6				20.2	3.70
1944	77.1				19.9	3.88
1945	79.6				19.3	4.12
1946	85.0				18.8	4.52
1947	99.8				19.3	5.17
1948	125.2				21.5	5.83
1949	120.5				21.1	5.72
1950	121.0				21.0	5.76
1951	124.5				20.9	5.96
1952	124.4				20.7	6.02
1953	136.5				22.3	6.12
1954	141.9				22.7	6.25
1955	142.8				22.7	6.29
1956	147.3				23.3	6.32
1957	154.1				24.5	6.28

MP-38, SOURCES

Col. A, BLS *Wholesale Prices* Bulls., series 658, 658.1, and 06-62-01, Florida land pebble, f.o.b. mines, 68% (1913-39), 70-72% (1940-55) (relative to 1926= 100).

Col. B, WPA National Research Project, *Technology, Employment, and Output per Man in Phosphate-Rock Mining, 1880-1937* (Report No. E-7, Nov. 1938), Table A-16, p. 115, Price f.o.b. mines, Florida land pebble, 68%.

Col. C, Ratio, Col. A/Col. B.

Col. D, Col. B times the average of the ratios in Col. C for 1913-17 (ratio, 31.05).

Col. E, Ratio, Col. A/Col. F.

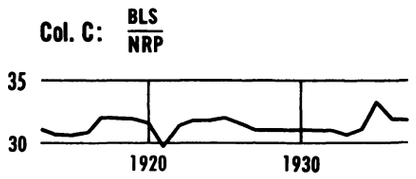
Col. F, Preferred series

1880-1951. *Hist. Stat. 1949,* series G-90, "value," divided by series G-89, "sold or used by producers"; and *Statistical Abstracts.*

1952-57. *Min. Yearbook 1957,* Vol. I, p. 916.

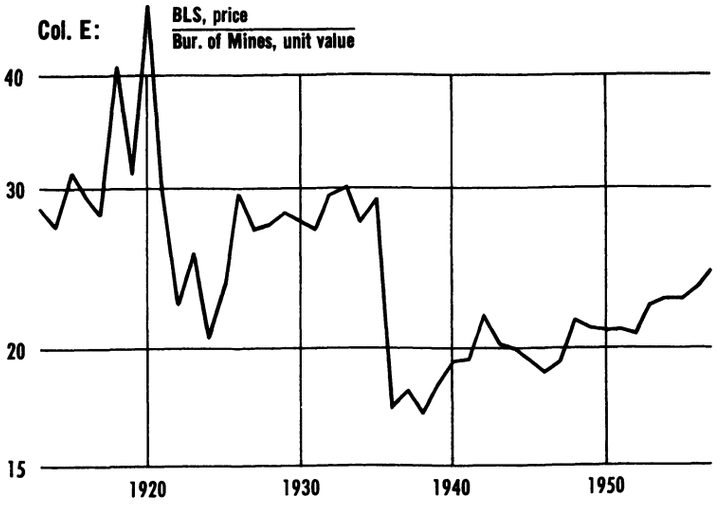
MP-38, NOTES

Col. A. The BLS adjusted its price relatives to take account of the change in specification in 1939-40 from 68% to 70-72%.



Col. F. The Col. E chart shows the ratio of the BLS price series to the Bureau of Mines average unit value. The major divergence between the two series occurs in the movements from 1935 to 1936. The 40% drop in the BLS price is substantiated by price series in *Minerals Yearbooks* and other sources and is parallelled by price movements for phosphate rock of other purities. The 5% drop of the average unit value series is also substantiated by *Minerals Yearbooks,* Barger & Schurr, and other sources. Although there has been a trend towards the higher priced, higher purity phosphate, this trend has been gradual and does not explain the sudden deviation. The increasing relative importance of production in states other than Florida has also been gradual.

It appears probable that the price quotations accepted by the BLS (and the WPA-NRP) were not the realized prices but some artificial quotation.



MP-39. POTASH: Price

MP-39, SOURCES

COL. A, BLS *Wholesale Prices* Bull. 493 (1913-28) and annual *Wholesale Prices* Bulls. thereafter (series 06-63-11).

MP-39, NOTES

The BLS series for muriate of potash underwent frequent change in specification, as noted below:

1913-18. 80-85% muriate of potash, per ton, N.Y., War Industries Board data.
1918-36. 80-85% muriate of potash, per ton, N.Y., trade journal data.
1937-39. 80%, c.i.f., ports.
1940. 50%, c.i.f., ports.
1941-48. 60%, bulk, N.Y.
1947-57. 60%, bulk, Carlsbad, New Mexico.

The BLS has made adjustments in its price relatives to take account of the changes in specifications and to obtain a consistent series of price movements.

The price relatives on a 1947-49 base (1947-57) have been spliced to the relatives on a 1926 base (1913-48) at 1947 on the basis of two years of overlap, 1947-48 (ratio, .8232).

	Price (1926 = 100)
	A
1913	108.5
1914	111.0
1915	557.8
1916	1096.8
1917	1084.0
1918	854.2
1919	449.2
1920	329.8
1921	140.9
1922	95.4
1923	94.6
1924	91.6
1925	98.7
1926	100.0
1927	103.6
1928	103.6
1929	104.3
1930	105.6
1931	105.8
1932	105.8
1933	105.8
1934	83.0
1935	66.1
1936	73.5
1937	79.5
1938	81.9
1939	81.9
1940	88.5
1941	89.3
1942	91.6
1943	89.2
1944	89.4
1945	89.4
1946	87.1
1947	84.6
1948	81.2
1949	81.2
1950	82.8
1951	86.9
1952	86.9
1953	87.5
1954	86.4
1955	84.0
1956	81.2
1957	77.0

MP-40. SULFUR: Price

	BLS, sulfur, crude, mines (1926 = 100)	Barger & Schurr, sulfur ($ per long ton)	Aldrich report, brimstone, crude (1860 = 100)	Col. C linked to Col. A at 1890-91 (ratio, 2.6988)	Preferred series, price index (1926 = 100)
	A	B	C	D	E
1870			104.4	282	282
1871			100.0	270	270
1872			75.6	204	204
1873			100.0	270	270
1874			75.6	204	204
1875			80.0	216	216
1876			77.2	208	208
1877			64.4	174	174
1878			61.1	165	165
1879			55.6	150	150
1880			61.1	165	165
1881			71.1	192	192
1882			74.4	201	201
1883			57.8	156	156
1884			55.6	150	150
1885			51.1	138	138
1886			50.0	135	135
1887			45.0	121	121
1888			44.4	120	120
1889			48.9	132	132
1890	116.1		43.3	117	116
1891	157.0		57.8	156	157
1892	132.6				133
1893	102.8				103
1894	91.1				91.1
1895	85.8				85.8
1896	98.6				98.6
1897	110.5				110
1898	125.9				126
1899	116.0	24.9			116
1900	116.1	28.0			116
1901	120.8	32.5			121
1902	128.7	20.4			129
1903	122.6	20.1			123
1904	119.6	20.9			120
1905	116.8	20.4			117
1906	121.6	17.3			122
1907	118.0	17.5			118
1908	119.7	18.1			120
1909	120.8	18.5			121
1910	120.8	18.0			121
1911	120.8	18.0			121
1912	120.8	17.3			121
1913	120.8	17.6			121
1914	120.8	18.2			121
1915	120.8	16.9			121
1916	172.1	16.0			172
1917	237.9	21.4			238
1918	177.3	22.0			177
1919	153.7	15.1			154
1920	130.9	20.0			131
1921	87.3	17.8			87.3
1922	77.3	16.4			77.3
1923	76.9	16.1			76.9
1924	77.4	16.3			77.4
1925	80.6	15.6			80.6
1926	100.0	18.0			100
1927	98.8	18.5			98.8
1928	98.8	18.0			98.8
1929	98.8	18.0			98.8
1930	98.8	18.0			98.8
1931	98.8	18.0			98.8
1932	98.8	18.0			98.8
1933	98.8	18.0			98.8
1934	98.8	17.9			98.8
1935	98.8	17.9			98.8
1936	98.8	18.0			98.8
1937	98.8	18.0			98.8
1938	96.1	16.8			96.1
1939	87.9	15.9			87.9
1940	87.9				87.9
1941	87.9				87.9
1942	87.9				87.9
1943	87.9				87.9
1944	87.9				87.9
1945	87.9				87.9
1946	87.9				87.9
1947	90.6				90.6
1948	98.8				98.8
1949	98.8				98.8
1950	104.4				104
1951	120.8				121
1952	120.8				121
1953	135.8				136
1954	145.5				146
1955	145.5				146
1956	145.5				146
1957	140.0				140

(Sources and Notes on next page)

MP-41. FLUORSPAR: Price

	Census, Value of shipments / shipments ($ per ton)	Preferred series, B & S and Bu. of Mines, price ($ per ton)
	A	B
1882		5.00
1883		5.00
1884		5.00
1885		4.50
1886		4.40
1887		4.00
1888		5.00
1889	4.60	4.82
1890		6.71
1891		7.80
1892		7.27
1893		6.77
1894		6.33
1895		6.00
1896		8.00
1897		7.34
1898		8.21
1899		6.08
1900		5.12
1901		5.81
1902	5.63	5.66
1903		5.02
1904		6.44
1905		6.32
1906		5.98
1907		5.81
1908		5.83
1909		5.75
1910		6.20
1911		7.02
1912		6.60
1913		6.37
1914		5.99
1915		5.58
1916		5.92
1917		10.5
1918		20.7
1919		25.5
1920		25.3
1921		20.7
1922		17.9
1923		20.7
1924		19.6
1925		18.1
1926		18.2
1927		18.1
1928		18.9
1929	18.1	19.1
1930		18.2
1931		17.4
1932		15.5
1933		14.2
1934		16.2
1935		15.0
1936		17.6
1937		20.2
1938		19.9
1939	16.4	20.3
1940		20.3
1941		21.0
1942		24.7
1943		29.1
1944		30.2
1945		30.5
1946		32.5
1947		33.2
1948		33.8
1949		34.9
1950		35.2
1951		41.4
1952		46.3
1953		49.5
1954	48.2	50.2
1955		45.0
1956		43.2
1957		48.0

MP-40 (Sulfur), SOURCES

Col. A, BLS *Wholesale Prices* Bulls. 320 and 493 (1890-1928); and subsequent annual Bulletins: series 630 (1936-48), index, 1926 = 100; and series 06-11-85 (1947-57), index, 1947-49 = 100 converted to 1926 = 100; generally designated "Crude sulfur, per ton, mines."

Col. B, Barger & Schurr, p. 291, sulfur, dollars per long ton.

Col. C, Aldrich report, Vol. III, Part 1, p. 49, "Wholesale price of crude brimstone, relative to 1860 as 100."

Col. D, Col. C times the average of the ratios of Col. A to Col. C for 1890 and 1891 (ratio 2.6988).

Col. E, Preferred series

1870-89. Col. D, transcribed.

1890-1957. Col. A, transcribed.

MP-40, NOTES

Col. C. Three different price series are available in the Aldrich report (the one given, and two in Vol. III, Part 2, pp. 250 and 264). Trends in relative movement are identical for the three series, although there are differences in annual fluctuations for certain years. This series has been chosen because it is presented in the summary tables. It shows a 34% increase between 1890 and 1891, while the BLS series shows a 36% increase. The Aldrich report price series has been spliced to the BLS series on the basis of the average ratios for these two years.

MP-41 (Fluorspar), SOURCES

Col. A, *1954 Census of Mineral Industries*, p. 14H-5, value of shipments, primary products, or net shipments, total, divided by shipments of primary products.

Col. B, Preferred series

1882-98. *Min. Resources 1900*, p. 858, production of fluorspar in the U.S., value divided by quantity.

1899-1939. Barger & Schurr, p. 291, price.

1940-57. *Min. Yearbook 1941*, p. 1402; *1943*, p. 1445; *1945*, p. 1424; *1947*, p. 502; *1949*, p. 513; *1951*, p. 576; *1952*, p. 419; *1954*, p. 462; *1955*, p. 466; *1957*, p. 501: fluorspar shipped from mines in the U.S., by states, value, average.

MP-41, NOTES

Prices used are average prices—not for any fixed grade.

Col. A. Census for 1902 and 1889 does not show value of primary products separately. The difference between net total shipments and primary products is apparently negligible for these periods; therefore, we have used the value of net shipments.

Minerals: Output (MO)

MO-1. MINERALS: Output

	Fuels	Nonmetals	Metals	Metals except gold & silver	All minerals output, total ($ bil.)		
	(billion dollars, 1954 prices)				1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G
1870	.278	(.051)	.091	.044	.131	.218	.420
1871	.283		.091	.048	.130	.220	.426
1872	.352		.087	.049	.144	.259	.502
1873	.389		.095	.054	.158	.284	.554
1874	.376		.097	.059	.157	.276	.543
1875	.369		.104	.068	.155	.275	.544
1876	.363		.123	.079	.165	.284	.560
1877	.411		.141	.090	.188	.323	.640
1878	.393		.149	.094	.191	.312	.637
1879	.496		.146	.102	.210	.374	.744
1880	.546	(.112)	.148	.107	.226	.397	.806
1881	.584		.156	.115	.240	.429	.867
1882	.650		.175	.135	.266	.481	.974
1883	.687		.176	.139	.276	.508	1.03
1884	.711		.180	.141	.289	.525	1.07
1885	.720		.183	.143	.298	.540	1.09
1886	.764		.202	.159	.323	.582	1.18
1887	.862		.222	.180	.363	.656	1.33
1888	.969		.241	.198	.409	.740	1.50
1889	.943	.299	.256	.213	.410	.734	1.50
1890	1.05		.274	.228	.449	.797	1.64
1891	1.13		.283	.236	.474	.847	1.74
1892	1.18		.312	.262	.493	.885	1.82
1893	1.19		.273	.222	.482	.873	1.78
1894	1.13		.278	.228	.464	.838	1.70
1895	1.26		.327	.268	.520	.938	1.90
1896	1.27		.355	.290	.534	.950	1.93
1897	1.30		.384	.316	.552	.971	1.98
1898	1.38		.417	.343	.586	1.03	2.10
1899	1.57		.470	.391	.660	1.16	2.37
1900	1.65		.522	.435	.704	1.21	2.50
1901	1.81		.531	.445	.745	1.31	2.67
1902	1.80	.319	.598	.510	.771	1.28	2.72
1903	2.22		.601	.520	.876	1.54	3.18
1904	2.24		.593	.505	.890	1.55	3.19
1905	2.49		.725	.631	1.01	1.74	3.60
1906	2.54	.387	.779	.676	1.04	1.76	3.71
1907	3.01	.388	.788	.696	1.16	1.99	4.19
1908	2.75	.384	.688	.593	1.07	1.85	3.82
1909	2.96	.434	.859	.754	1.20	2.03	4.26
1910	3.24	.462	.900	.799	1.29	2.19	4.60
1911	3.26	.461	.822	.719	1.28	2.17	4.54
1912	3.43	.487	.942	.841	1.37	2.31	4.86
1913	3.69	.505	.992	.891	1.45	2.46	5.19
1914	3.48	.479	.855	.754	1.35	2.30	4.81
1915	3.60	.462	1.04	.935	1.45	2.43	5.10
1916	3.93	.521	1.34	1.24	1.64	2.74	5.79
1917	4.35	.482	1.34	1.25	1.73	2.91	6.17
1918	4.52	.401	1.31	1.23	1.73	2.91	6.23
1919	3.98	.415	.997	.931	1.51	2.54	5.39
1920	4.64	.481	1.04	.983	1.71	2.87	6.16
1921	4.03	.426	.520	.463	1.40	2.36	4.98
1922	4.00	.518	.802	.741	1.53	2.49	5.32
1923	5.48	.648	1.12	1.06	2.05	3.42	7.25
1924	5.03	.651	1.08	1.01	1.93	3.22	6.76
1925	5.12	.714	1.18	1.11	2.02	3.29	7.01
1926	5.58	.740	1.24	1.18	2.16	3.58	7.56
1927	5.67	.789	1.17	1.11	2.20	3.63	7.63
1928	5.56	.796	1.20	1.14	2.19	3.61	7.56
1929	6.04	.833	1.33	1.28	2.39	3.92	8.20
1930	5.39	.747	1.04	.987	2.11	3.44	7.18
1931	4.77	.565	.687	.637	1.77	2.89	6.02
1932	4.16	.380	.359	.311	1.44	2.35	4.90
1933	4.60	.368	.408	.359	1.58	2.56	5.38
1934	4.81	.414	.501	.440	1.69	2.74	5.73
1935	5.09	.434	.638	.564	1.85	2.94	6.16
1936	5.73	.598	.926	.839	2.14	3.47	7.25
1937	6.25	.640	1.24	1.14	2.44	3.89	8.13
1938	5.57	.569	.756	.659	2.09	3.34	6.90
1939	5.99	.653	1.04	.933	2.32	3.71	7.68
1940	6.55	.701	1.30	1.19	2.58	4.11	8.55
1941	6.99	.860	1.50	1.40	2.82	4.50	9.35
1942	7.31	.935	1.69	1.61	2.98	4.78	9.94
1943	7.72	.803	1.62	1.59	3.01	4.87	10.14
1944	8.38	.761	1.48	1.45	3.15	5.08	10.62
1945	8.24	.782	1.27	1.24	3.07	4.92	10.29
1946	8.16	.919	1.02	.986	3.05	4.89	10.10
1947	8.95	1.04	1.35	1.30	3.44	5.47	11.34
1948	9.32	1.13	1.39	1.34	3.70	5.74	11.84
1949	8.00	1.10	1.24	1.19	3.22	5.09	10.34
1950	8.82	1.24	1.44	1.39	3.59	5.66	11.50
1951	9.77	1.36	1.55	1.50	3.97	6.26	12.69
1952	9.62	1.40	1.44	1.39	3.95	6.22	12.47
1953	9.72	1.45	1.57	1.53	4.05	6.35	12.74
1954	9.33	1.58	1.25	1.21	3.93	6.16	12.17
1955	10.17	1.73	1.53	1.48	4.30	6.75	13.43
1956	10.80	1.86	1.56	1.51	4.57	7.16	14.23
1957	10.79	1.88	1.60	1.55	4.60	7.21	14.28

MO-1, SOURCES

Computation of Index Weighted by 1954 Prices:

COL. A, Fuels. Table MO-2, Col. G, transcribed.

COL. B, Nonmetals. Table MO-20, Col. M, transcribed.

COL. C, Metals. Table MO-7, Col. N, transcribed.

COL. D, All metals except gold and silver. Table MO-7, Col. K, transcribed.

COLS. E and F, Output indicators, all minerals, 1902 and 1929 prices. Computed exactly as Col. G, except that 1902 and 1929 prices were used as weights in the computation. (For weights, see notes to Tables MO-2, MO-20, and MO-7.)

COL. G, Output indicator, all minerals, 1954 prices. Sum, Cols. A through C, linked for missing series.

MO-1, NOTES

( ) Rough estimate.

MO-2. MINERAL FUELS: Output

	Petroleum	Natural gas	Bituminous coal	Anthracite	Mineral fuels ($ mil.)		
	(million dollars, 1954 prices)				1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G
1870	14.7		92.7	171	63.9	147	278
1871	14.5		103	166	65.7	150	283
1872	17.5		123	211	81.1	186	352
1873	27.5		143	218	90.4	203	389
1874	30.3		139	207	87.8	196	376
1875	24.5		148	197	86.2	190	369
1876	25.3		144	194	84.9	188	363
1877	37.0		155	219	96.4	212	411
1878	42.8		165	185	93.0	198	393
1879	55.3		183	258	116.9	255	496
1880	73.1		229	244	131	273	546
1881	77.0		235	272	139	294	584
1882	84.4	.3	266	299	155	327	650
1883	65.1	.8	293	328	163	346	687
1884	67.3	2.4	324	317	169	355	711
1885	60.8	8	324	327	173	362	720
1886	78.0	16	337	333	187	386	764
1887	78.6	24	400	359	213	434	862
1888	76.6	35	460	397	242	488	969
1889	97.7	25	432	388	234	473	943
1890	127	24	502	396	261	519	1049
1891	151	18	532	432	280	558	1133
1892	140	16	573	447	288	577	1176
1893	134	15	580	460	291	585	1189
1894	136	15	536	443	277	557	1130
1895	146	14	610	494	308	621	1264
1896	169	14	621	463	311	618	1267
1897	168	15	666	448	319	627	1297
1898	154	17	752	455	338	661	1378
1899	158	23	873	515	386	750	1569
1900	177	24	958	489	409	777	1648
1901	192	27	1019	575	448	864	1813
1902	246	28	1175	353	454	815	1802
1903	278	30	1276	636	550	1043	2220
1904	325	31	1258	624	559	1052	2238
1905	375	35	1422	662	624	1166	2494
1906	350	39	1548	608	639	1174	2545
1907	461	41	1782	730	757	1394	3014
1908	497	41	1501	710	692	1287	2749
1909	508	49	1714	691	749	1370	2962
1910	582	51	1883	720	820	1492	3236
1911	610	52	1832	771	826	1515	3265
1912	619	57	2032	719	871	1570	3427
1913	688	59	2160	780	936	1693	3687
1914	738	60	1908	774	887	1612	3480
1915	780	63	1998	759	920	1662	3600
1916	836	76	2268	747	1008	1795	3927
1917	930	80	2491	849	1115	1992	4350
1918	988	73	2615	842	1157	2058	4518
1919	1049	75	2103	751	1029	1830	3978
1920	1230	82	2567	764	1203	2110	4643
1921	1310	68	1877	771	1049	1866	4026
1922	1549	78	1906	466	1066	1810	3999
1923	2031	104	2549	796	1450	2506	5480
1924	1982	117	2183	750	1342	2322	5032
1925	2120	122	2348	527	1379	2318	5117
1926	2140	135	2588	720	1493	2550	5583
1927	2501	149	2337	683	1534	2605	5670
1928	2501	161	2260	642	1514	2559	5564
1929	2796	197	2415	629	1655	2776	6037
1930	2493	200	2110	591	1486	2496	5394
1931	2363	174	1725	509	1320	2213	4771
1932	2179	161	1398	425	1160	1939	4163
1933	2515	161	1506	422	1283	2135	4604
1934	2520	183	1622	487	1340	2240	4812
1935	2768	199	1681	445	1426	2362	5093
1936	3054	225	1982	465	1602	2646	5726
1937	3551	250	2011	442	1764	2891	6254
1938	3369	238	1573	393	1585	2596	5573
1939	3512	256	1783	439	1698	2787	5990
1940	3756	276	2080	439	1855	3031	6551
1941	3892	292	2321	481	1971	3226	6986
1942	3851	318	2630	514	2057	3372	7313
1943	4181	355	2664	517	2184	3568	7717
1944	4658	385	2797	543	2376	3879	8383
1945	4758	408	2607	468	2355	3823	8241
1946	4814	419	2410	516	2339	3809	8159
1947	5155	463	2847	488	2566	4154	8953
1948	5608	520	2706	487	2695	4352	9321
1949	5113	547	1977	364	2360	3786	8001
1950	5480	634	2331	376	2606	4171	8821
1951	6241	753	2409	364	2911	4639	9767
1952	6358	809	2107	346	2898	4608	9620
1953	6543	848	2064	264	2946	4658	9719
1954	6427	883	1769	248	2856	4509	9327
1955	6897	950	2098	223	3101	4890	10168
1956	7275	1018	2262	247	3292	5194	10802
1957	7275	1079	2225	216	3312	5209	10795

MO-2, SOURCES

Computation of 1954-Weighted Index:

COL. A, Petroleum. Table MO-4, Col. A, times $2.78 (1954: value of output divided by quantity of output, *Min. Yearbook 1954*, Vol. II, p. 314).

COL. B, Natural gas. Table MO-4, Col. B, times $.101/1000 cu. ft. (1954: value of output divided by quantity of output, *Min. Yearbook 1954*, Vol. II, p. 277).

COL. C, Bituminous coal. Table MO-5, Col. B, times $4.52 (1954: value of output divided by quantity of output, *Min. Yearbook 1954*, Vol. II, p. 34).

COL. D, Anthracite. Table MO-6, Col. B, times $8.53 (1954: value of output divided by quantity of output, *Min. Yearbook 1954*, Vol. II, p. 139).

COLS. E and F, Output indicators, mineral fuels, 1902 and 1929 prices. Computed exactly as Col. G, except that 1902 and 1929 prices were used as weights in the computation. (For weights, see notes, below.)

COL. G, Output indicator, mineral fuels, 1954 prices. Sum, Cols. A through D.

MO-2, NOTES

Natural gasoline and cycle products are included in natural gas, which is "natural gas, wet."

COLS. E and F. The weights used in the computation of the 1902- and 1929-weighted output indicators are as follows:

	Commodity	*1902 price weights*	*1929 price weights*
A	Petroleum	$.802/bbl.	$1.27/bbl.
B	Natural gas	.058/thous. cu. ft.	.082/thous. cu. ft.
C	Bituminous coal	1.12/short ton	1.78/short ton
D	Anthracite	1.84/ton	5.22/short ton

MO-3. MINERAL FUELS: Output in Btu

(quadrillion British thermal units)

	Petroleum	Natural gas	Bituminous coal	Anthracite	Hist. Stat., all fuels	Sum, Cols. A–D	Preferred series, all fuels
	A	B	C	D	E	F	G
1870	.031		.536	.508	1.07	1.07	1.07
1871	.030		.599	.495		1.12	1.12
1872	.037		.716	.627		1.38	1.38
1873	.057		.828	.650		1.53	1.53
1874	.063		.805	.617		1.48	1.48
1875	.051		.856	.587	1.49	1.49	1.49
1876	.053		.834	.579		1.47	1.47
1877	.078		.901	.652		1.63	1.63
1878	.089		.954	.551		1.59	1.59
1879	.115		1.06	.767		1.94	1.94
1880	.153		1.33	.728	2.21	2.21	2.21
1881	.161		1.36	.811		2.33	2.33
1882	.176	.004	1.54	.892		2.61	2.61
1883	.136	.008	1.70	.977		2.82	2.82
1884	.140	.026	1.88	.944		2.99	2.99
1885	.127	.082	1.88	.974	3.06	3.06	3.06
1886	.163	.169	1.96	.991		3.28	3.28
1887	.164	.259	2.32	1.07		3.81	3.81
1888	.160	.369	2.67	1.18		4.38	4.38
1889	.204	.269	2.51	1.15		4.14	4.14
1890	.266	.257	2.92	1.18	4.62	4.62	4.62
1891	.315	.197	3.09	1.29		4.89	4.89
1892	.293	.171	3.32	1.33		5.11	5.11
1893	.281	.160	3.36	1.37		5.17	5.17
1894	.286	.155	3.11	1.32		4.87	4.87
1895	.307	.147	3.54	1.47	5.47	5.46	5.46
1896	.354	.151	3.61	1.38		5.50	5.50
1897	.351	.160	3.87	1.34		5.72	5.72
1898	.321	.186	4.36	1.36		6.23	6.23
1899	.331	.240	5.06	1.53		7.16	7.16
1900	.369	.138	5.56	1.46	7.64	7.53	7.53
1901	.403	.194	5.92	1.71	8.32	8.23	8.23
1902	.515	.221	6.82	1.05	8.68	8.61	8.61
1903	.580	.257	7.41	1.90	10.20	10.15	10.2
1904	.679	.276	7.30	1.86	10.17	10.11	10.1
1905	.783	.344	8.26	1.97	11.39	11.36	11.4
1906	.731	.418	8.98	1.81	11.95	11.94	11.9
1907	.963	.438	10.34	2.17	13.92	13.92	13.9
1908	1.04	.432	8.71	2.12	12.30	12.30	12.3
1909	1.06	.517	9.95	2.06	13.59	13.59	13.6
1910	1.22	.547	10.93	2.15	14.84	14.85	14.8
1911	1.28	.551	10.63	2.30	14.76	14.76	14.8
1912	1.29	.604	11.79	2.14	15.83	15.82	15.8
1913	1.44	.626	12.53	2.32	16.93	16.92	16.9
1914	1.54	.636	11.07	2.31	15.56	15.56	15.6
1915	1.63	.676	11.60	2.26	16.2	16.2	16.2
1916	1.75	.809	13.17	2.22	17.9	17.9	17.9
1917	1.94	.855	14.46	2.53	19.8	19.8	19.8
1918	2.06	.775	15.18	2.51	20.5	20.5	20.5
1919	2.19	.802	12.21	2.24	17.4	17.4	17.4
1920	2.57	.873	14.90	2.28	20.6	20.6	20.6
1921	2.74	.725	10.90	2.30	16.7	16.7	16.7
1922	3.24	.834	11.06	1.39	16.5	16.5	16.5
1923	4.25	1.10	14.79	2.37	22.5	22.5	22.5
1924	4.14	1.25	12.67	2.23	20.3	20.3	20.3
1925	4.43	1.30	13.63	1.57	20.9	20.9	20.9
1926	4.47	1.44	15.02	2.14	23.1	23.1	23.1
1927	5.23	1.58	13.57	2.03	22.4	22.4	22.4
1928	5.23	1.72	13.12	1.91	22.0	22.0	22.0
1929	5.84	2.10	14.02	1.88	23.9	23.8	23.9
1930	5.21	2.13	12.25	1.76	21.4	21.3	21.4
1931	4.94	1.85	10.01	1.52	18.3	18.3	18.3
1932	4.55	1.71	8.11	1.27	15.7	15.6	15.7
1933	5.25	1.72	8.74	1.26	17.0	17.0	17.0
1934	5.27	1.95	9.42	1.45	18.1	18.1	18.1
1935	5.78	2.12	9.76	1.32	19.0	19.0	19.0
1936	6.38	2.39	11.50	1.39	21.7	21.7	21.7
1937	7.42	2.66	11.67	1.32	23.1	23.1	23.1
1938	7.04	2.53	9.13	1.17	19.9	19.9	19.9
1939	7.34	2.73	10.35	1.31	21.8	21.7	21.8
1940	7.85	2.94	12.07	1.31	24.2	24.2	24.2
1941	8.13	3.11	13.47	1.43	26.2	26.1	26.2
1942	8.04	3.38	15.27	1.53	28.3	28.2	28.3
1943	8.73	3.78	15.46	1.54	29.6	29.5	29.6
1944	9.73	4.10	16.23	1.62	31.8	31.7	31.8
1945	9.94	4.35	15.13	1.40	30.9	30.8	30.9
1946	10.06	4.46	13.99	1.54	30.1	30.0	30.1
1947	10.77	4.93	16.52	1.45	33.8	33.7	33.8
1948	11.72	5.53	15.71	1.45	34.5	34.4	34.5
1949	10.68	5.83	11.47	1.08	29.2	29.1	29.2
1950	11.45	6.75	13.53	1.12	32.9	32.8	32.9
1951	13.04	8.02	13.98	1.08	36.2	36.1	36.2
1952	13.28	8.61	12.23	1.03	35.2	35.1	35.2
1953	13.67	9.03	11.98	.786	35.6	35.5	35.6
1954	13.43	9.40	10.26	.739	33.9	33.8	33.9
1955	14.41	10.11	12.17	.665	37.5	37.4	37.5
1956	15.18	10.84	13.12	.734	40.0	39.9	40.0
1957	15.18	11.48	12.91	.644	40.3	40.2	40.3

MO-3, SOURCES

Col. A, Petroleum. Table MO-4, Col. A, times 5.8 (million Btu per barrel).

Col. B, Natural gas. Table MO-4, Col. B, times 1,075 (Btu per cu. ft.).

Col. C, Bituminous coal. Table MO-5, Col. B, times 26.2 (million Btu per ton).

Col. D, Anthracite. Table MO-6, Col. B, times 25.4 (million Btu per ton).

Col. E, All mineral fuels. *Hist. Stat. 1960*, series M-71 (Bureau of Mines data, converted to Btu).

Col. F, Sum of Cols. A through D.

Col. G, Preferred series.

1870-1905. Col. F, transcribed.

1906-57. Col. E, transcribed.

MO-3, NOTES

The factors for conversion of mineral fuels to Btu were taken from footnote 1 to Table 49 in *Min. Yearbook 1952*, Vol. II, p. 122.

The discrepancy between the series in Cols. E and F in 1900-05 is due to an error in the *Historical Statistics* series, which disagrees with its series M-138 (gas output in cubic feet). The slight differences between Cols. E and F in 1929-57 are due to an allowance in the *Historical Statistics* series for liquids taken from natural gas which was not marketed but repressured, vented, or wasted.

MO-4. PETROLEUM AND NATURAL GAS: Output

	Crude petroleum (mil. bbl.)	Natural gas (bil. cu. ft.)	Petroleum and gas ($ mil., 1954 prices)
	A	B	C
1870	5.3		14.7
1871	5.2		14.5
1872	6.3		17.5
1873	9.9		27.5
1874	10.9		30.3
1875	8.8		24.5
1876	9.1		25.3
1877	13.3		37.0
1878	15.4		42.8
1879	19.9		55.3
1880	26.3		73.1
1881	27.7		77.0
1882	30.3	3.4	84.7
1883	23.4	7.8	65.9
1884	24.2	24	69.7
1885	21.9	76	68.8
1886	28.1	157	94.0
1887	28.3	241	103
1888	27.6	343	112
1889	35.2	250	123
1890	45.8	239	151
1891	54.3	183	169
1892	50.5	159	156
1893	48.4	149	149
1894	49.3	144	151
1895	52.9	137	160
1896	61.0	140	183
1897	60.5	149	183
1898	55.4	173	171
1899	57.1	223	181
1900	63.6	236	201
1901	69.4	263	219
1902	88.8	280	274
1903	100.5	297	308
1904	117.1	310	356
1905	134.7	351	410
1906	126.5	389	389
1907	166.1	407	502
1908	178.5	402	538
1909	183.2	481	558
1910	209.6	509	633
1911	220.4	513	662
1912	222.9	562	676
1913	248.4	582	747
1914	265.8	592	798
1915	281	629	843
1916	301	753	912
1917	335	795	1010
1918	356	721	1061
1919	378	746	1124
1920	443	812	1312
1921	472	674	1378
1922	558	776	1627
1923	732	1025	2135
1924	714	1162	2099
1925	764	1210	2242
1926	771	1336	2275
1927	901	1471	2650
1928	901	1596	2662
1929	1007	1952	2993
1930	898	1979	2693
1931	851	1722	2537
1932	785	1594	2340
1933	906	1597	2676
1934	908	1816	2703
1935	997	1969	2967
1936	1100	2225	3279
1937	1279	2473	3801
1938	1214	2358	3613
1939	1265	2538	3768
1940	1353	2734	4032
1941	1402	2894	4184
1942	1387	3146	4169
1943	1506	3516	4536
1944	1678	3815	5043
1945	1714	4042	5166
1946	1734	4153	5233
1947	1857	4582	5618
1948	2020	5148	6128
1949	1842	5420	5660
1950	1974	6282	6114
1951	2248	7457	6994
1952	2290	8013	7167
1953	2357	8397	7391
1954	2315	8743	7310
1955	2484	9405	7847
1956	2617	10082	8293
1957	2617	10680	8354

MO-4, SOURCES

Col. A, Crude petroleum

1870-1955. Sam H. Schurr, Bruce C. Netschert, and Associates, *Energy in the American Economy, 1850-1975* (Johns Hopkins Press and Resources for the Future, 1960), p. 491-93.

1956-57. *Min. Yearbook 1959,* Vol. II, p. 339.

Col. B, Natural gas

1870-1955. Schurr *et al., loc. cit.*

1956-57. *Min. Yearbook 1959,* Vol. II, p. 295.

Col.C, Petroleum and natural gas. Col. A times 1954 average value ($2.78 per barrel, from Table MP-4, Col. L), plus Col. B times 1954 average value ($.101 per 1,000 cu. ft., from Table MP-6, Col. I).

MO-4, NOTES

Col. A. This series is identical to *Hist. Stat. 1960,* series M-133, except for a slight error in *Hist. Stat.* in 1954 (source, Bureau of Mines).

Col. B. This series is the same as *Hist. Stat. 1960,* series M-138, for 1906-56, when the Bureau of Mines had reports of gas used, in cubic feet. For earlier years there are varying estimates, dependent on estimates of coal displaced by the use of gas, value data, etc. The Bureau of Mines in 1956 published two such estimates, one in a series on output in cubic feet (*Min. Yearbook 1956,* Vol. II, p. 5), the other implicit in a series on energy content (*ibid.,* p. 2). *Hist. Stat.* uses the former series, while Schurr & Netschert uses the latter. The latter is more consistent with the earlier figures, published in Arthur F. Burns, *Production Trends in the United States since 1870* (National Bureau of Economic Research, 1934, p. 292), and Barger & Schurr (Table A-1).

Col. C. The computation is the same as in Cols. A and B of Table MO-2.

MO-5. BITUMINOUS COAL: Output

	Census, production of bituminous coal and lignite (mil. tons)	Preferred series, Bu. of Mines, production, bituminous coal and lignite (mil. tons)
	A	B
1870	19.3	20.5
1871		22.9
1872		27.3
1873		31.6
1874		30.7
1875		32.7
1876		31.8
1877		34.4
1878		36.4
1879		40.4
1880	42.8	50.8
1881		51.9
1882		58.9
1883		64.9
1884		71.7
1885		71.8
1886		74.6
1887		88.6
1888		102
1889	95.7	95.7
1890		111
1891		118
1892		127
1893		128
1894		119
1895		135
1896		138
1897		148
1898		167
1899		193
1900		212
1901		226
1902	260	260
1903		283
1904		279
1905		315
1906		343
1907		395
1908		333
1909	377	380
1910		417
1911		406
1912		450
1913		478
1914		423
1915		443
1916		503
1917		552
1918		579
1919	460	466
1920		569
1921		416
1922		422
1923		565
1924		484
1925		520
1926		573
1927		518
1928		501
1929	537	535
1930		467
1931		382
1932		310
1933		334
1934		359
1935	372	372
1936		439
1937		446
1938		349
1939	395	395
1940		461
1941		514
1942		583
1943		590
1944		620
1945		578
1946		534
1947		631
1948		600
1949		438
1950		516
1951		534
1952		467
1953		457
1954	391	392
1955		465
1956		501
1957		493

MO-5, SOURCES

COL. A, *1939 Census of Mineral Industries*, p. 230, and *1954 Census*, p. 12A-4, "Net production of bituminous coal and lignite, 1,000 short tons clean coal equivalent."

COL. B, Preferred series, *Hist. Stat. 1960*, series M-88, and *Stat. Abstract 1958*, "Bituminous coal, production (including lignite)" (Bureau of Mines).

MO-5, NOTES

Hist. Stat. 1960 data for 1870-75 are from H. N. Eavenson, *The First Century and a Quarter of American Coal Industry* (Pittsburgh, 1942), pp. 426-34. This source is used by the Bureau of Mines in its recent publications.

MO-6. ANTHRACITE: Output

	Census, production or shipments (mil. tons)	Preferred series, Bu. Mines, production, Pennsylvania anthracite (mil. tons)
	A	B
1870	17.5	20.0
1871		19.5
1872		24.7
1873		25.6
1874		24.3
1875		23.1
1876		22.8
1877		25.7
1878		21.7
1879		30.2
1880	28.7	28.6
1881		31.9
1882		35.1
1883		38.5
1884		37.2
1885		38.3
1886		39.0
1887		42.1
1888		46.6
1889	45.5	45.5
1890		46.5
1891		50.7
1892		52.5
1893		54.0
1894		51.9
1895		58.0
1896		54.3
1897		52.6
1898		53.4
1899		60.4
1900		57.4
1901		67.5
1902	41.4	41.4
1903		74.6
1904		73.2
1905		77.7
1906		71.3
1907		85.6
1908		83.3
1909	81.0	81.1
1910		84.5
1911		90.5
1912		84.4
1913		91.5
1914		90.8
1915		89.0
1916		87.6
1917		99.6
1918		98.8
1919	88.2	88.1
1920		89.6
1921		90.5
1922		54.7
1923		93.3
1924		87.9
1925		61.8
1926		84.4
1927		80.1
1928		75.3
1929	74.5	73.8
1930		69.4
1931		59.6
1932		49.9
1933		49.5
1934		57.2
1935	52.2	52.2
1936		54.6
1937		51.9
1938		46.1
1939	51.9	51.5
1940		51.5
1941		[a]56.4
1942		[a]60.3
1943		[a]60.6
1944		[a]63.7
1945		[a]54.9
1946		[a]60.5
1947		[a]57.2
1948		[a]57.1
1949		[a]42.7
1950		[a]44.1
1951		42.7
1952		40.6
1953		30.9
1954	28.7	29.1
1955		26.2
1956		28.9
1957		25.3

MO-6, SOURCES

COL. A

1870-1939. *1954 Census of Mineral Industries,* p. 11B-5, "Net production of anthracite."

1954. *Ibid.,* "Net shipments of anthracite."

COL. B, Preferred series. *Hist. Stat. 1960,* series M-118, "Pennsylvania Anthracite," and *Stat. Abstract 1958,* appendix series M-118 (original source, *Min. Yearbook*).

MO-6, NOTES

[a] The data for 1941-50 include small amounts of "bootleg" or "independent"-produced coal, purchased by the large companies for resale; beginning 1951, the figures include all independents' output. (Ref.: *Min. Yearbook 1951,* p. 411; *1949,* pp. 365 and 366). Amounts involved (millions of tons):

	Total "independent" production	*"Independent" output included in statistics of Table MO-6 (output purchased for preparation by "recognized operations")*
1941	6.30	1.90
1942	3.93	2.62
1943	1.91	1.27
1944	1.33	.51
1945	1.03	.26
1946	1.45	.35
1947	1.63	.60
1948	1.84	.54
1949	1.26	.44
1950	2.13	.60
1951	1.54	[1] 1.54

[1] Total output included in statistics; no figure given for purchases by "recognized operations". No figures given for years following 1951.

MO-7. METALS: Output

(1954 price weights except as noted)

	Iron ore	Manganese	Molybdenum	Copper	Lead	Zinc	Bauxite	Mercury	Gold	Silver	All metals except gold & silver	All metals		
												1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1870	26			7	4			7	43	4	44	54	46	91
1871	(27)			7	5			8	37	6	48	51	44	91
1872	(27)			7	6			8	31	7	49	48	42	87
1873	(27)			9	10	1		7	31	9	54	51	46	95
1874	(27)			10	12	2		7	29	9	59	51	46	97
1875	28			10	14	3		12	29	8	68	51	50	104
1876	(32)			10	15	3		18	34	10	79	60	59	123
1877	(36)			12	19	3		19	40	10	90	69	68	141
1878	(41)			12	21	3		16	44	11	94	74	72	149
1879	(45)			13	22	4		18	34	10	102	66	68	146
1880	49	1		15	23	4		15	31	10	107	65	69	148
1881	49	1		18	27	5		15	30	11	115	67	73	156
1882	62	1		22	31	6		13	28	12	135	72	81	175
1883	58	1		28	34	7		11	26	12	139	71	82	176
1884	57	2		36	33	7		8	27	12	141	74	84	180
1885	52	4		41	30	7		8	27	13	143	76	86	183
1886	69	5		39	31	8		7	30	13	159	82	93	202
1887	78	6		45	34	9		8	29	14	180	87	102	222
1888	84	5		56	35	10		8	29	15	198	94	112	241
1889	100	4		56	36	10	*	6	29	16	213	100	118	256
1890	110	3		64	34	11	*	6	28	18	228	107	126	274
1891	101	4		70	42	14	*	6	29	19	236	110	131	283
1892	112	2		85	41	15	*	7	29	21	262	120	146	312
1893	80	1		81	38	14	*	7	31	20	222	110	131	273
1894	82	1		87	37	13	*	7	34	16	228	111	134	278
1895	110	2		93	39	15	*	9	40	18	268	129	156	327
1896	110	2		113	44	13	*	7	46	19	290	141	172	355
1897	121	2		121	48	17	*	6	50	18	316	150	185	384
1898	134	3		129	49	20	*	8	56	18	343	163	201	417
1899	170	2		140	49	23	*	7	61	18	391	182	226	470
1900	190	2		149	63	23	*	7	68	19	435	200	249	522
1901	199	2		148	63	25	*	7	68	18	445	201	252	531
1902	246	1		162	65	28	*	8	69	18	510	221	282	598
1903	242	*		172	68	29	*	9	63	18	520	218	284	601
1904	190	1		200	72	33	*	9	70	18	505	222	288	593
1905	293	1		218	75	36	1	7	76	18	631	262	345	725
1906	330	1		226	81	32	1	6	84	19	676	280	368	779
1907	357	1		213	84	34	1	5	75	17	696	276	368	788
1908	248	1		232	75	32	*	5	79	17	593	252	333	688
1909	354	*		268	85	41	1	5	86	19	754	305	409	859
1910	393	*		265	90	44	1	5	82	19	799	314	424	900
1911	303	*		270	94	45	1	5	84	20	719	295	395	822
1912	381	*		306	94	52	1	6	80	22	841	329	448	942
1913	429	1		301	99	56	2	5	77	23	891	342	467	992
1914	286	*		283	123	56	2	4	79	23	754	302	411	855
1915	383	2	*	341	122	80	3	5	85	24	935	362	498	1043
1916	519	5	*	474	132	95	4	7	79	26	1236	446	639	1341
1917	520	22	*	464	131	97	5	9	70	23	1247	436	630	1340
1918	481	52	1	469	129	86	5	8	57	22	1231	416	608	1311
1919	421	9	*	316	102	74	3	5	49	17	931	322	465	997
1920	467	16	*	297	114	80	5	3	42	19	983	329	477	1044
1921	204	2	n.a.	124	95	35	1	2	42	15	463	177	240	520
1922	325	2	n.a.	234	112	64	3	2	41	20	741	262	374	802
1923	479	5	*	353	130	83	5	2	43	23	1058	357	523	1123
1924	375	10	*	402	136	86	3	2	44	21	1014	345	514	1078
1925	427	17	1	411	157	96	3	2	41	22	1115	369	553	1178
1926	467	8	1	428	163	105	4	2	40	20	1178	385	582	1238
1927	426	8	2	414	160	97	3	3	38	20	1113	363	553	1170
1928	429	8	3	449	150	94	3	4	38	19	1141	373	570	1198
1929	504	10	4	492	161	98	3	6	37	20	1278	410	632	1335
1930	403	11	4	343	138	80	3	5	38	16	987	322	486	1041
1931	215	7	3	256	94	55	2	6	40	10	637	222	330	687
1932	68	3	2	134	61	39	1	3	40	7	311	129	178	359
1933	121	3	6	111	62	52	1	2	41	8	359	142	194	408
1934	170	5	9	120	72	59	2	4	50	11	440	174	235	501
1935	210	5	11	187	75	70	2	4	58	16	564	224	305	638
1936	337	5	18	300	93	78	3	4	67	20	839	313	443	926
1937	498	7	30	410	106	85	4	4	73	23	1144	405	591	1241
1938	196	4	26	276	80	70	3	4	76	20	659	270	374	756
1939	357	5	33	351	101	79	3	5	83	21	933	351	502	1037
1940	509	7	25	447	104	90	4	9	87	23	1195	433	625	1304
1941	638	13	39	475	113	101	8	11	85	22	1398	482	711	1504
1942	732	29	67	535	112	104	24	12	62	18	1615	512	797	1694
1943	697	31	54	537	98	101	56	13	24	14	1587	482	769	1625
1944	649	38	40	493	94	97	26	9	18	11	1447	429	687	1476
1945	610	28	33	385	86	83	9	7	17	10	1241	364	581	1267
1946	489	22	17	295	70	78	10	6	28	8	986	305	468	1022
1947	642	20	22	424	91	86	11	6	38	12	1303	406	626	1353
1948	697	20	30	414	81	85	13	3	36	12	1344	416	641	1392
1949	586	19	23	373	97	80	10	2	35	11	1190	371	571	1237
1950	676	20	45	448	100	84	12	1	43	14	1387	431	672	1444
1951	801	16	38	458	82	92	17	2	35	13	1506	460	714	1554
1952	676	17	43	456	92	90	15	3	34	13	1394	428	673	1440
1953	814	24	54	464	79	74	14	3	35	12	1528	460	725	1575
1954	539	31	64	410	77	64	18	4	33	12	1206	365	588	1251
1955	711	43	65	495	77	70	16	5	34	12	1482	442	708	1528
1956	676	52	57	550	84	73	16	6	33	13	1514	453	728	1560
1957	731	55	57	532	84	72	13	8	32	13	1552	462	737	1597

MO-7, SOURCES

1954 Price Weights:

COL. A, Iron (ore). Table MO-8, Col. A, times $6.90 (1954: value of output divided by index of output).

COL. B, Manganese. Table MO-11, Col. B, times $151 (1954: value of output divided by output index).

COL. C, Molybdenum. Table MO-12, Col. A, times $1.00 (1954: value of output divided by output index).

COL. D, Copper. Table MO-13, Col. B, times $492 (1954: value of output divided by output index).

COL. E, Lead. Table MO-14, Col. E, times $240 (1954: value of output divided by output index).

COL. F, Zinc. Table MO-15, Col. I, times $135 (1954: value of output divided by output).

COL. G, Bauxite. Table MO-16, Col. A, times $9.07 (1954 average value of net shipments).

COL. H, Mercury. Table MO-18, Col. B, times $243 (1954: value of output divided by output index).

COL. I, Gold. Table MO-19, Col. B, times $17.8 (1954: value of output divided by output index).

COL. J, Silver. Table MO-19, Col. A, times $0.328 (1954: value of output divided by output index).

COL. K, Output indicator, all metals except gold and silver (1954 weights). Sum, Cols. A through H.

COLS. L and M, Output indicators, all metals, 1902 and 1929 prices. Computed exactly as Col. N, except that 1902 and 1929 prices were used as weights in the computation. (For weights, see notes, below).

COL. N, Output indicator, all metals, 1954 prices. Sum, Cols. A through J.

MO-7, NOTES

* Under $500,000.

( ) 1871-74 and 1876-79 computed by straight line interpolation.

Value-of-output figures are from *1954 Census of Mineral Industries*, except for molybdenum figures, which are from *Min. Yearbook 1954*.

The gold and silver weights, which cause considerable difference in the movement of the different indexes (with 1954, 1929, 1902 weights) are dubious, because the values are those of the Census—which omits gold and silver produced as byproducts of other metal mines (thus omitting a *majority* of the silver output). The 1902 relative weights thus appear considerably too heavy relative to the 1954 and 1929 weights—perhaps because Census classifications of mines fluctuate widely in the gold-silver-copper-lead-zinc groups. These figures also omit Alaska, though our series on output of these metals (from Bureau of Mines) includes Alaska. The other metals also suffer from (minor) understatement or overstatement of value on this account.

The value data of Census attempt to give mine (or mill) value, deducting from the market values of the finished metals the costs of smelting and of transporting ores, whereas the Bureau of Mines data generally give (finished) value of metal content of ores.

If uranium, thorium, titanium, tungsten, magnesium, etc., were included in the calculation of this index, it would rise considerably more after 1941, so that it would be 5 to 10% higher in 1955-57.

Col. F. The weight used for zinc ($135/ton) was computed from preliminary output data for 1954, which gave 465,000 tons instead of the 473,000 tons given in Table MO-15. The correct weight would be $133/ton.

Cols. L and M. The weights used in the computation of the 1902- and 1929-weighted output indicators are as follows:

	Commodity	*1902 price weights*	*1929 price weights*
A	Iron	$1.84/long ton	$2.70/long ton
B	Manganese	21.00/ton	13.6/ton
C	Molybdenum	—	.59/lb.
D	Copper	155/ton	284/ton
E	Lead	37/ton	101/ton
F	Zinc	48/ton	62/ton
G	Bauxite	5.1/long ton	6.4/long ton
H	Mercury	47/flask	118/flask
I	Gold	15.7/oz.	10.39/oz.
J	Silver	.40/oz.	.14/oz.

MO-8. IRON (ORE): Output

	Output (mil. long tons)
	A
1870	3.83
1875	(4.02)
1880	7.12
1881	(7.12)
1882	(9.00)
1883	(8.40)
1884	(8.20)
1885	[a](7.60)
1886	[a](10.0)
1887	[a](11.3)
1888	[a](12.1)
1889	14.5
1890	16.0
1891	14.6
1892	16.3
1893	11.6
1894	11.9
1895	16.0
1896	16.0
1897	17.5
1898	19.4
1899	24.7
1900	27.6
1901	28.9
1902	35.6
1903	35.0
1904	27.6
1905	42.5
1906	47.8
1907	51.7
1908	36.0
1909	51.3
1910	57.0
1911	43.9
1912	55.2
1913	62.0
1914	41.4
1915	55.5
1916	75.2
1917	75.3
1918	69.7
1919	61.0
1920	67.6
1921	29.5
1922	47.1
1923	69.4
1924	54.3
1925	61.9
1926	67.6
1927	61.7
1928	62.2
1929	73.0
1930	58.4
1931	31.1
1932	9.85
1933	17.6
1934	24.6
1935	30.5
1936	48.8
1937	72.1
1938	28.4
1939	51.7
1940	73.7
1941	92.4
1942	106
1943	101
1944	94.1
1945	88.4
1946	70.8
1947	93.1
1948	101
1949	84.9
1950	98.0
1951	116
1952	97.9
1953	118
1954	78.1
1955	103
1956	98
1957	106

MO-9. IRON (PIG): Output

	Production (million tons)
	A
1870	1.86
1871	1.91
1872	2.85
1873	2.87
1874	2.69
1875	2.27
1876	2.09
1877	2.31
1878	2.58
1879	3.07
1880	4.29
1881	4.64
1882	5.18
1883	5.15
1884	4.59
1885	4.53
1886	6.36
1887	7.19
1888	7.27
1889	8.52
1890	10.31
1891	9.27
1892	10.26
1893	7.98
1894	7.46
1895	10.58
1896	9.66
1897	10.81
1898	13.19
1899	15.25
1900	15.44
1901	17.78
1902	19.96
1903	20.17
1904	18.48
1905	25.75
1906	28.34
1907	28.87
1908	17.85
1909	28.89
1910	29.87
1911	26.05
1912	33.80
1913	34.04
1914	24.93
1915	34.0
1916	43.8
1917	43.2
1918	42.6
1919	33.9
1920	40.0
1921	18.0
1922	31.0
1923	43.0
1924	34.8
1925	41.2
1926	42.8
1927	39.1
1928	42.9
1929	46.5
1930	33.5
1931	19.9
1932	9.54
1933	16.1
1934	17.5
1935	23.7
1936	34.5
1937	39.5
1938	20.4
1939	35.9
1940	47.0
1941	55.2
1942	59.1
1943	60.8
1944	61.0
1945	53.3
1946	45.1
1947	58.4
1948	60.1
1949	52.9
1950	64.6
1951	70.2
1952	61.2
1953	74.2
1954	57.8
1955	77.3
1956	75.1
1957	76.9

MO-10. STEEL: Output

	Output (mil. short tons)
	A
1870	.077
1871	.082
1872	.160
1873	.223
1874	.242
1875	.437
1876	.597
1877	.638
1878	.820
1879	1.05
1880	1.40
1881	1.78
1882	1.94
1883	1.87
1884	1.74
1885	1.92
1886	2.87
1887	3.74
1888	3.25
1889	3.79
1890	4.79
1891	4.37
1892	5.52
1893	4.50
1894	4.94
1895	6.85
1896	5.92
1897	8.02
1898	10.0
1899	11.9
1900	11.4
1901	15.1
1902	16.7
1903	16.3
1904	15.5
1905	22.4
1906	26.2
1907	26.2
1908	15.7
1909	26.8
1910	29.2
1911	26.5
1912	35.0
1913	35.1
1914	26.3
1915	36.0
1916	47.9
1917	50.5
1918	49.8
1919	38.8
1920	47.2
1921	22.2
1922	39.9
1923	50.3
1924	42.5
1925	50.8
1926	54.1
1927	50.3
1928	57.7
1929	63.2
1930	45.6
1931	29.1
1932	15.3
1933	26.0
1934	29.2
1935	38.2
1936	53.5
1937	56.6
1938	31.8
1939	52.8
1940	67.0
1941	82.8
1942	86.0
1943	88.8
1944	89.6
1945	79.7
1946	66.6
1947	84.9
1948	88.6
1949	78.0
1950	96.8
1951	105
1952	93.2
1953	112
1954	88.3
1955	117
1956	115
1957	113

MO-8 (Iron Ore), SOURCES

COL. A

1870-1954. *Hist. Stat. 1949*, series G-93, and *Stat. Abstract 1956*, appendix series G-93, "Iron ore production."

1955-57. *Min. Yearbook 1957*, Vol. I, p. 583.

MO-8, NOTES

( ) Estimated by various authors.

[a] Consumption of domestic ores, used as an approximation to production.

The data are for long tons of usable ore and beginning in 1942 include byproduct ore obtained from pyrites. Prior to 1906, the data include ores containing up to 40% manganese and are not consequently strictly comparable to those for 1906 and years following. Barger and Schurr (p. 278) give figures for 1899-1905 adjusted to exclude ores containing more than 5% manganese. These adjustments, however, are never more than 1% and average about 0.6%.

MO-9 (Pig Iron), SOURCES

COL. A, *Hist. Stat. 1960*, series M-207, and *Min. Yearbook 1957*, Vol. I, p. 614, "Shipments."

MO-10 (Steel), SOURCES

COL. A

1870-1954. *Metal Stat. 1955*, p. 113, "Steel production in U.S."

1955-57. *Min. Yearbook 1957*, Vol. I, p. 614.

MO-10, NOTES

The data are from the American Iron and Steel Institute and represent production of steel ingots and steel for castings.

MO-11. MANGANESE: Output

	Census, ore and concentrates (1000 tons)	Preferred series, shipments of ore (1000 tons)
	A	B
1880	12	6.45
1881		5.48
1882		5.08
1883		6.89
1884		11.4
1885		26.0
1886		33.8
1887		38.7
1888		32.7
1889	27	27.1
1890		21.6
1891		25.1
1892		15.2
1893		8.64
1894		7.06
1895		10.7
1896		11.3
1897		12.4
1898		17.9
1899		11.1
1900		13.2
1901		13.4
1902	18	8.38
1903		3.16
1904		3.52
1905		4.61
1906		7.75
1907		6.28
1908		6.88
1909		1.73
1910		2.53
1911		2.75
1912		1.86
1913		4.53
1914		2.95
1915		10.7
1916		32.2
1917		145
1918		343
1919		61.6
1920		106
1921		15.2
1922		15.0
1923		35.3
1924		63.3
1925		110
1926		51.8
1927		50.1
1928		52.5
1929	46	67.6
1930		75.1
1931		44.0
1932		19.9
1933		21.4
1934		29.7
1935		29.6
1936		36.0
1937		45.1
1938		28.4
1939	54	32.8
1940		44.0
1941		87.8
1942		191
1943		205
1944		248
1945		182
1946		144
1947		132
1948		131
1949		126
1950		134
1951		105
1952		115
1953		158
1954	510	206
1955		287
1956		345
1957		366

MO-12. MOLYBDENUM: Output

	Shipments (million lb.)
	A
1915	.182
1916	.207
1917	.350
1918	.862
1919	.298
1920	.035
1921	n.a.
1922	n.a.
1923	.023
1924	.297
1925	1.15
1926	1.43
1927	2.29
1928	3.33
1929	3.90
1930	3.76
1931	3.16
1932	2.37
1933	5.76
1934	9.38
1935	10.89
1936	17.96
1937	30.12
1938	25.73
1939	32.42
1940	25.33
1941	38.38
1942	66.44
1943	53.96
1944	39.42
1945	32.52
1946	16.79
1947	22.19
1948	29.67
1949	23.28
1950	44.54
1951	37.96
1952	42.72
1953	53.82
1954	64.02
1955	64.71
1956	57.13
1957	57.14

MO-11 (Manganese), SOURCES

COL. A, *1954 Census of Mineral Industries*, p. 10I-2, "Manganese ores and concentrates" converted from long tons to short tons.

COL. B, Preferred series. Bureau of Mines, as given in *Hist. Stat. 1949*, series G-104, and *Min. Yearbooks*, "Manganese ore (35% or more Mn)—total mine shipments."

MO-11, NOTES

The Bureau of Mines data represent shipments of manganese ore containing 35% or more Mn beginning in 1915; prior to that the figures refer to manganese ore containing 40% or more Mn.

The Census data for 1880-1939 represent "merchantable ore and concentrates"; for 1954, ores of all grades, including some requiring beneficiation before use. An attempt has been made to eliminate double counting involved in the original *1954 Census* figure of 830,000 tons, by subtracting 375,000 tons reported received at beneficiating plants; the 830,000 figure included shipments from both mines and mills (*1954 Census*, p. 10I-4, note 6).

Other series are available for lower grade manganese ores in Barger & Schurr (1899-1937) and Bureau of Mines publications. Output of these lower grade ores underwent severe fluctuations. In years of high output, value of low grade ores was more than twice the value of 35%-or-more ores.

MO-12 (Molybdenum), SOURCES

COL. A, Bureau of Mines, as given in *Hist. Stat. 1949*, series G-110; *Stat. Abstract 1956*, appendix series G-110; and *Min. Yearbook 1957*, Vol. I, p. 867. Data are for shipments of molybdenum contained in molybdenum concentrates.

MO-13. COPPER: Output

	Census, mine production (1000 tons)	Preferred series, Bu. of Mines, smelter production (1000 tons)
	A	B
1870		14.1
1871		14.6
1872		14.0
1873		17.4
1874		19.6
1875		20.2
1876		21.3
1877		23.5
1878		24.1
1879		25.8
1880	28.1	30.2
1881		35.8
1882		45.3
1883		57.8
1884		72.5
1885		82.9
1886		78.9
1887		90.7
1888		113
1889	110	113
1890		130
1891		142
1892		172
1893		165
1894		177
1895		190
1896		230
1897		247
1898		263
1899		284
1900		303
1901		301
1902	313	330
1903		349
1904		406
1905		444
1906		459
1907		434
1908		471
1909	n.a.	546
1910		540
1911		549
1912		622
1913		612
1914		575
1915		694
1916		964
1917		943
1918		954
1919	n.a.	643
1920		605
1921		253
1922		475
1923		718
1924		817
1925		837
1926		870
1927		842
1928		913
1929	n.a.	1001
1930		697
1931		521
1932		272
1933		225
1934		244
1935		381
1936		611
1937		835
1938		562
1939	692	713
1940		909
1941		966
1942		1088
1943		1093
1944		1003
1945		783
1946		600
1947		863
1948		842
1949		758
1950		911
1951		931
1952		927
1953		943
1954	806	834
1955		1007
1956		1118
1957		1081

MO-13, SOURCES

COL. A, *1954 Census of Mineral Industries*, p. 10D-3, "Recoverable copper content of direct-smelting and leaching ores, concentrates, and copper precipitates" (converted to short tons).

COL. B, Preferred series. *Hist. Stat. 1949*, series G-112 (source, Bureau of Mines); *Stat. Abstract 1956*, appendix series G-112; *Min. Yearbook 1957*, Vol. I, p. 418: "Smelter production from domestic ores."

MO-13, NOTES

Series are also available for recoverable content of mine production, and for refinery output of domestic materials. The differences in relative movements of the three series are insignificant.

The Census series are in remarkably close agreement with the Bureau of Mines reports. Differences may be due largely to differences between shipments or production of mines and the completion of refining by smelters.

MO-14. LEAD: Output

	Min. Resources, production (1,000 tons)	Hist. Stat., production (1,000 tons)	Col. B / Col. A	Preferred series, production (1,000 tons)
	A	B	C	D
1870	18	18	1.00	18
1871	20	20	1.00	20
1872	26	26	1.00	26
1873	43	42	.977	42
1874	52	51	.981	51
1875	60	59	.983	59
1876	64	63	.984	63
1877	82	80	.976	80
1878	91	89	.978	89
1879	93	91	.978	91
1880	98	96	.980	96
1881	117	114	.974	114
1882	133	130	.977	130
1883	144	140	.972	140
1884	140	136	.971	136
1885	129	126	.977	126
1886	131			128
1887	146			142
1888	152			148
1889	156			152
1890	144			140
1891	179			174
1892	173			169
1893	164			160
1894	159			155
1895	166			162
1896	187			182
1897	207			202
1898	211			206
1899	208			203
1900	271			264
1901	269			262
1902	276			269
1903	290			283
1904	309			301
1905	319			311
1906				336
1907				352
1908				312
1909				353
1910				375
1911				392
1912				393
1913				412
1914				513
1915				507
1916				552
1917				548
1918				540
1919				424
1920				477
1921				398
1922				469
1923				544
1924				566
1925				655
1926				681
1927				668
1928				626
1929				672
1930				574
1931				390
1932				255
1933				260
1934				300
1935				311
1936				388
1937				443
1938				332
1939				421
1940				433
1941				471
1942				467
1943				407
1944				394
1945				357
1946				293
1947				381
1948				339
1949				404
1950				419
1951				343
1952				383
1953				328
1954				322
1955				321
1956				349
1957				348

MO-14, SOURCES

Col. A, *Min. Resources 1909*, Part I, p. 183, "refined lead from domestic ores and base bullion" (including antimonial lead).

Col. B, *Hist. Stat. 1949*, series G-114.

Col. C, Ratio, Col. B/Col. A.

Col. D, Preferred series

1870-85. Col. B, transcribed.

1886-1905. Col. A times average 1881-85 ratio in Col. C (0.974).

1906-17. *Min. Resources 1919*, Part I, p. 314.

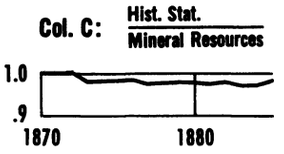
1918-53. *Metal Stat. 1955*, p. 495.

1954-57. *Min. Yearbook 1957*, Vol. I, p. 692.

MO-14, NOTES

Col. C. The figures from *Min. Resources 1909* give production from domestic ores and base bullion, including production of antimonial lead. The figures in *Hist. Stat. 1949* exclude antimonial lead but include production from foreign ores in 1886 and the years following. The figures in Col. A have been adjusted to exclude antimonial lead on the basis of the ratio Col. B/Col. A, and the result has been brought up to date by series which refer to production from domestic ores and base bullion, excluding antimonial lead.

Although it would be better to include output of antimonial lead, the recent series do not do so. The above adjustment was made to maintain consistency.



MO-15. ZINC: Output

(thousand tons)

	Smelter production of primary slab	Mine prod., recoverable content	Zinc cont. in zinc oxide	Zinc in slab and oxide	Col. B / Col. D	Estimated mine output	Col. F / Col. A	Preferred series, zinc output, recoverable content
	A	B	C	D	E	F	G	H
1873	7.34							9.82
1874	10.00							13.4
1875	15.83							21.2
1876	16.00							21.4
1877	17.50							23.4
1878	19.00							25.4
1879	21.00							28.1
1880	23.24		8.09	31.3		32.8	1.41	32.8
1881	30.00		8.00	38.0		39.7	1.32	39.8
1882	33.76		8.00	41.8		43.7	1.29	43.7
1883	36.87		9.60	46.5		48.6	1.32	48.6
1884	38.54		10.40	48.9		51.2	1.33	51.2
1885	40.69		12.00	52.7		55.1	1.35	55.1
1886	42.64		14.40	57.0		59.7	1.40	59.7
1887	50.34		14.40	64.7		67.7	1.35	67.7
1888	55.90		16.00	71.9		75.2	1.35	75.2
1889	58.86		13.58	72.4		75.8	1.29	75.8
1890	63.68		(16.00)	79.7		83.3	1.31	83.4
1891	80.87		18.96	99.8		104.4		104
1892	87.26		22.00	109.3		114.3		114
1893	78.83		20.00	98.8		103.4		103
1894	75.33		18.25	93.6		97.9		97.9
1895	89.69		18.15	107.8		112.8		113
1896	81.50		12.69	94.2		98.5		98.5
1897	99.98		21.01	121.0		126.6		127
1898	115.4		26.20	141.6		148.1		148
1899	129.0		31.73	160.8		168.2		168
1900	123.9		37.72	161.6		169.0		169
1901	140.8		37.20	178.0		186.2		186
1902	156.9		42.18	199.1		208,3		208
1903	159.2		47.65	206.9		216.4		216
1904	[a]186.7		47.69	234.4		245.2		245
1905	[a]203.8		52.32	256.2		268.0		268
1906	[a]199.7	235						235
1907	223.7	252.9						253
1908	190.7	233.7	45.8	236.5	.988			234
1909	230.2	302	55.2	285.4	1.06			302
1910	252.5	325	46.8	299.3	1.09			325
1911	271.6	332						332
1912	323.9	385						385
1913	337.2	413						413
1914	343.4	415						415
1915	458	588						588
1916	564	703						703
1917	585	714						714
1918	492	636						636
1919	452	549						549
1920	450	588						588
1921	198	257						257
1922	353	472						472
1923	508	610						610
1924	516	638						638
1925	556	711						711
1926	612	774						774
1927	577	719						719
1928	591	695						695
1929	612	724						724
1930	489	595						595
1931	292	410						410
1932	207	285						285
1933	306	384						384
1934	355	439						439
1935	412	518						518
1936	492	576						576
1937	551	626						626
1938	436	517						517
1939	491	584						584
1940	590	665						665
1941	653	749						749
1942	630	768						768
1943	594	744						744
1944	574	719						719
1945	467	614						614
1946	459	575						575
1947	510	638						638
1948	538	630						630
1949	591	593						593
1950	588	623						623
1951	622	681						681
1952	576	666						666
1953	495	547						547
1954	380	473						473
1955	583	515						515
1956	470	542						542
1957	540	532						532

MO-15, SOURCES

COL. A, Smelter production of primary slab zinc from domestic ores
1873-1905. *Metal Stat. 1955*, p. 543.
1906-15. *Stat. Abstract 1916*, p. 713.
1916. *Min. Resources 1919*, Part I, p. 654.
1917-57. *Metal Stat. 1959*, p. 514.

COL. B, Mine production, recoverable content
1906-39. Barger & Schurr, Table A-1, Cols. 4D plus 5B.
1940-57. *Bus. Stat. 1957*, p. 163 (times 12).

COL. C, Zinc content in zinc oxide
1880-1905. Walter R. Ingalls, *Lead and Zinc in the United States* (Hill Publishing Co., 1908), p. 338, "Tenor in zinc at 80%" (% zinc oxide tonnage).
1908-10. *Min. Resources 1915*, Part I, p. 854, "Production of zinc oxide" times 80% (to obtain zinc content).

COL. D, Zinc in slab and oxide. Col. A plus Col. C.

COL. E. Ratio, Col. B/Col. D.

COL. F, Estimated mine output. Col. D times the average of ratios in Col. E (1.046).

COL. G, Ratio, Col. F/Col. A.

COL.H, Preferred series
1873-79. Col. A times the average ratio in Col. G (1.338).
1880-1905. Col. F, transcribed.
1906-57. Col. B, transcribed.

MO-15, NOTES

( ) Estimate.
[a] Includes some foreign ore.

The *Metal Statistics* series is the most convenient long-term presentation of slab output, but it includes foreign-ore slab for the period 1905-16; we have substituted the series noted in Col. A for this period.

The major difference between smelter and mine production, besides beneficiation losses, is that 20-35% of recoverable zinc has been going directly to production of zinc dust and zinc pigments and salts, thus by-passing the slab zinc stage. For the years 1880-1905, this has been approximated by adding 80% of zinc oxide output to smelter production and adding 4.6% to the total (Col. F) to cover other items. For 1873-79, a 33.8% addition has been made to slab output to cover all pigments, dust, etc.

MO-16. BAUXITE: Output

	Output or shipments (1000 long tons)
	A
1889	1
1890	2
1891	4
1892	11
1893	9
1894	11
1895	17
1896	18
1897	21
1898	25
1899	33
1900	23
1901	20
1902	27
1903	45
1904	51
1905	57
1906	71
1907	94
1908	50
1909	132
1910	151
1911	157
1912	161
1913	211
1914	219
1915	300
1916	425
1917	569
1918	606
1919	377
1920	521
1921	140
1922	310
1923	523
1924	348
1925	317
1926	392
1927	321
1928	375
1929	366
1930	331
1931	196
1932	96
1933	154
1934	169
1935	245
1936	380
1937	425
1938	311
1939	375
1940	439
1941	937
1942	2602
1943	6233
1944	2824
1945	981
1946	1104
1947	1202
1948	1457
1949	1149
1950	1335
1951	1849
1952	1667
1953	1580
1954	1995
1955	1788
1956	1744
1957	1416

MO-17. ALUMINUM: Output

	Output of primary (1,000 tons)
	A
1893	† 0.1
1894	† 0.2
1895	† 0.3
1896	† 0.5
1897	† 1.2
1898	† 1.5
1899	† 1.6
1900	† 2.5
1901	† 2.9
1902	† 2.9
1903	† 3.3
1904	† 4.1
1905	† 5.4
1906	† 7.1
1907	8.2
1908	5.3
1909	14.5
1910	17.7
1911	19.2
1912	20.9
1913	23.6
1914	29.0
1915	45.3
1916	57.6
1917	64.9
1918	62.4
1919	64.2
1920	69.0
1921	27.3
1922	36.8
1923	64.3
1924	75.3
1925	70.1
1926	73.7
1927	81.8
1928	105.3
1929	114.0
1930	114.5
1931	88.8
1932	52.4
1933	42.6
1934	37.1
1935	59.6
1936	112
1937	146
1938	143
1939	164
1940	206
1941	309
1942	521
1943	920
1944	776
1945	495
1946	410
1947	572
1948	623
1949	603
1950	719
1951	837
1952	937
1953	1252
1954	1461
1955	1566
1956	1679
1957	1648

MO-16 (Bauxite), SOURCES

COL. A, *Hist. Stat. 1960*, series M-249, and *Min. Yearbook 1958*, Vol. I, p. 210, output or shipments (see notes).

MO-16, NOTES

The series is somewhat inconsistent over time. The most serious inconsistency is the variation in content of moisture; only for 1934 (see *Min. Yearbook 1939*, p. 635) to 1957 are the data reduced to a dried bauxite equivalent basis. Over this period, weight "as shipped" or "as produced" varied from 7% below "dried equivalent" to 20% above.

A small inconsistency is in the basis of reporting. Data represent production for 1919-28 and 1940-57, production or shipments for 1929-34, and shipments for 1889-1918 and 1935-39.

MO-17, (Aluminum), SOURCES

COL. A

1893-1954. U.S. Department of Commerce, Business and Defense Services Administration, *Materials Survey, Aluminum* (Nov. 1956), Table VIII-6 (source, Bureau of Mines).

1955-57. *Min. Yearbook 1957*, Vol. I, p. 165.

MO-17, NOTES

† Year ending August 31.

This series is the same as *Hist. Stat. 1960*, series M-251. It includes production from foreign as well as domestic ores.

MO-18. MERCURY: Output

	1954 Census, production (1000 flasks)	Preferred series, Metal Stat., production (1000 flasks)
	A	B
1870		30.1
1871		31.7
1872		31.6
1873		27.6
1874		27.8
1875		50.2
1876		72.7
1877		79.4
1878		63.9
1879		73.7
1880		59.9
1881		60.8
1882		52.7
1883		46.7
1884		31.9
1885		32.1
1886		30.0
1887		33.8
1888		33.2
1889	26.64	26.5
1890		22.9
1891		22.9
1892		28.0
1893		30.2
1894		30.4
1895		36.1
1896		30.8
1897		26.7
1898		31.7
1899		30.4
1900		28.3
1901		29.7
1902	34.52	34.3
1903		35.6
1904		(35.1)
1905		30.1
1906		25.7
1907		21.3
1908		19.5
1909		20.8
1910		20.3
1911		21.0
1912		24.7
1913		20.0
1914		16.3
1915		20.8
1916		29.5
1917		35.7
1918		32.4
1919		21.1
1920		13.2
1921		6.3
1922		6.3
1923		7.8
1924		9.9
1925		9.0
1926		7.5
1927		11.1
1928		17.9
1929	23.77	23.7
1930		21.5
1931		24.9
1932		12.6
1933		9.7
1934		15.4
1935		17.5
1936		16.6
1937		16.5
1938		18.0
1939	18.22	18.6
1940		37.8
1941		44.9
1942		50.8
1943		51.9
1944		37.7
1945		30.8
1946		25.3
1947		23.2
1948		14.4
1949		9.9
1950		4.5
1951		7.3
1952		12.5
1953		14.3
1954	17.49	18.5
1955		19.0
1956		24.2
1957		33.4

MO-19. GOLD AND SILVER: Output

	Silver production (mil. fine oz.)	Gold production (mil. fine oz.)
	A	B
1870	12.4	2.42
1871	17.8	2.10
1872	22.2	1.74
1873	27.6	1.74
1874	28.9	1.62
1875	24.5	1.62
1876	30.0	1.93
1877	30.8	2.27
1878	35.0	2.48
1879	31.6	1.88
1880	30.3	1.74
1881	33.3	1.68
1882	36.2	1.57
1883	35.7	1.45
1884	37.7	1.49
1885	39.9	1.54
1886	39.7	1.69
1887	41.7	1.60
1888	45.8	1.60
1889	50.1	1.60
1890	54.5	1.59
1891	58.3	1.60
1892	63.5	1.60
1893	60.0	1.74
1894	49.5	1.91
1895	55.7	2.26
1896	58.8	2.57
1897	53.9	2.78
1898	54.4	3.12
1899	54.8	3.44
1900	57.6	3.83
1901	55.2	3.81
1902	55.5	3.87
1903	54.3	3.56
1904	56.0	3.91
1905	56.3	4.26
1906	57.4	4.70
1907	52.5	4.23
1908	50.9	4.44
1909	57.3	4.80
1910	57.6	4.58
1911	61.1	4.69
1912	66.0	4.47
1913	71.2	4.31
1914	69.6	4.42
1915	72.4	4.75
1916	78.9	4.42
1917	70.7	3.90
1918	68.1	3.21
1919	51.9	2.75
1920	56.5	2.38
1921	46.2	2.34
1922	61.2	2.29
1923	70.4	2.40
1924	64.1	2.44
1925	66.7	2.31
1926	62.5	2.23
1927	59.6	2.11
1928	57.9	2.15
1929	60.9	2.06
1930	47.7	2.14
1931	29.9	2.22
1932	22.8	2.27
1933	23.1	2.29
1934	32.8	2.78
1935	48.5	3.24
1936	61.2	3.78
1937	71.4	4.12
1938	61.7	4.27
1939	64.4	4.67
1940	70.6	4.87
1941	67.3	4.75
1942	54.1	3.46
1943	41.5	1.36
1944	34.5	.998
1945	29.0	.955
1946	22.9	1.58
1947	35.8	2.11
1948	38.1	2.01
1949	34.7	1.99
1950	42.5	2.39
1951	39.8	1.98
1952	39.4	1.89
1953	37.6	1.96
1954	36.9	1.84
1955	37.2	1.88
1956	38.7	1.83
1957	38.2	1.79

MO-18 (Mercury), SOURCES

COL. A, *1954 Census of Mineral Industries*, p. 10K-2, "Mercury metal produced," 1,000 flasks of 76 lb. (source, Bureau of Mines).

COL. B, Preferred series

1870-1954. *Metal Stat. 1955*, p. 671, and *1957*, p. 683, "Production of mercury in the United States," 1,000 flasks of 76 lb. (source, Bureau of Mines).

1955-57. *Min. Yearbook 1957*, Vol. I, p. 825.

MO-18, NOTES

( ) Estimate.

MO-19 (Gold and Silver), SOURCES

COL. A, Silver production. *Hist. Stat. 1949*, series G-120, and *Stat. Abstracts*, appendix series G-120, "Silver, quantity."

COL. B, Gold production, *Ibid.*, series G-118, "Gold, quantity."

MO-19, NOTES

These series include Alaskan output.

MO-20. NONMETALS: Output

(million dollars, 1954 prices, except as noted)

	Stone	Cement rock	Sand & gravel	Clays	Gypsum	Phosphate rock	Potash	Sulfur	Fluorspar	Salt	Nonmetals output, total ($ mil.)		
											1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I	J	K	L	M
1870	(43)										(13)	(25)	(51)
1880	(95)	1	8		*	1		*	*	4	(30)	(55)	(112)
1881		1	8		*	2		*	*	4			
1882		1	9		*	2		*	*	5			
1883		2	10		*	2		*	*	4			
1884		1	10		*	3		1	*	5			
1885		2	10		*	4		1	*	5			
1886		2	11		*	3		1	*	6			
1887		3	13		*	3		1	*	6			
1888		2	13		*	3		1	*	6			
1889	267	2	13		1	3		1	*	6	76	143	299
1890		3	14		1	3		1	*	6			
1891		3	15		1	4		2	*	7			
1892		3	15		1	4		2	1	8			
1893		3	15		1	6		1	1	9			
1894		3	15		1	6		2	*	9			
1895		3	16		1	6		2	*	10			
1896		3	16		1	6		2	*	10			
1897		4	18		1	6		2	*	11			
1898		4	18		1	8		3	*	13			
1899		6	22		2	9		3	1	14			
1900		6	23		2	9		3	1	15			
1901		7	24	6	2	9		4	1	15			
1902	241	9	29	6	3	9		3	2	17	96	182	319
1903		11	32	7	4	10		4	2	14			
1904		12	32	7	4	12		6	2	16			
1905		15	39	8	4	12		11	3	19			
1906	255	19	49	9	6	13		14	2	20	126	226	387
1907	256	19	50	9	7	14		10	2	21	129	230	388
1908	249	19	49	7	7	15		15	2	21	129	225	384
1909	281	24	61	9	9	14		12	2	22	144	252	434
1910	291	28	71	10	9	16		12	3	22	156	273	462
1911	289	29	69	9	9	19		11	4	22	156	270	461
1912	291	30	70	10	10	18		28	6	24	171	289	487
1913	298	34	82	11	10	19		20	6	25	176	299	505
1914	279	32	82	10	10	17		19	5	25	165	280	479
1915	264	32	79	10	9	11	*	23	7	27	165	276	462
1916	291	34	92	13	11	12	*	28	8	32	185	308	521
1917	238	34	79	14	10	16	1	43	11	36	180	290	482
1918	178	26	64	13	8	15	1	46	13	37	157	244	401
1919	195	30	73	11	9	14	2	39	7	35	157	247	415
1920	219	37	85	15	12	25	2	42	9	35	183	287	481
1921	194	36	82	10	11	13	*	53	2	25	169	253	426
1922	239	42	98	14	15	15	*	53	7	35	197	310	518
1923	298	51	142	18	18	19	1	59	6	36	248	386	648
1924	302	55	158	19	19	18	1	38	6	35	241	385	651
1925	331	59	170	21	22	21	1	44	6	38	266	422	714
1926	333	61	180	22	22	20	1	57	6	38	283	444	740
1927	357	64	195	23	21	20	2	63	5	39	304	473	789
1928	349	65	206	24	20	22	2	60	7	41	309	481	796
1929	366	63	212	26	19	23	2	71	7	44	327	504	833
1930	321	59	182	25	13	24	2	75	5	41	299	457	747
1931	236	46	133	19	10	16	2	62	3	38	229	347	565
1932	170	28	88	14	5	11	2	28	1	33	148	231	380
1933	151	23	68	16	5	15	5	42	4	39	153	233	368
1934	177	28	78	17	6	17	4	44	4	39	172	264	414
1935	167	28	87	21	7	19	8	50	6	41	183	280	434
1936	253	42	124	25	10	21	8	61	9	45	247	382	598
1937	257	43	129	28	12	24	10	81	9	47	272	411	640
1938	241	39	109	20	10	23	11	71	4	41	243	367	569
1939	290	46	122	26	12	23	14	64	9	47	267	419	653
1940	288	49	135	29	14	25	15	82	11	53	295	455	701
1941	330	61	187	41	18	29	20	93	16	65	363	557	860
1942	326	68	240	40	18	29	25	102	17	70	404	612	935
1943	279	49	181	41	15	32	27	81	20	78	345	530	803
1944	254	34	156	40	15	33	31	98	20	80	340	510	761
1945	256	38	157	41	15	36	33	111	16	79	354	523	782
1946	306	61	198	51	22	42	35	114	13	77	407	609	919
1947	350	69	219	56	24	56	39	130	16	82	462	691	1041
1948	383	76	241	63	28	53	43	141	16	84	499	747	1128
1949	377	78	238	56	26	55	42	137	11	80	489	729	1100
1950	426	84	266	67	32	63	48	153	15	85	550	820	1239
1951	471	91	295	76	33	68	53	158	17	103	604	909	1365
1952	487	92	311	75	32	70	60	160	16	100	624	938	1403
1953	502	98	318	75	32	77	65	159	15	106	643	969	1447
1954	525	101	409	72	35	80	72	170	12	106	706	1057	1582
1955	595	109	433	86	41	81	75	179	14	116	763	1154	1729
1956	625	116	484	92	40	87	79	199	16	124	828	1241	1862
1957	687	109	480	86	35	90	80	179	16	122	831	1259	1884

MO-20, SOURCES

Computation of Index Weighted by 1954 Prices:

COL. A, Stone. Table MO-21, Col. K, transcribed.

COL. B, Cement rock. Table MO-24, Col. C (barrels of cement converted to tons of cement rock by ratio 1 barrel cement equals .25 ton cement rock), times $1.46/ton (*1954 Census of Mineral Industries,* p. 14D-5, quarries included in establishments classified in manufacturing industries: value of product divided by quantity of crushed and broken stone produced).

COL. C, Sand and gravel

1880-1908. Table MO-26, Col. B, times $1.03/ton.

1909-57. Table MO-26, Col. C, times $1.03/ton (*1954 Census of Mineral Industries,* p. 14E-4, sand and gravel industry, total: value of sand and gravel divided by shipments in tons).

COL. D, Clays. Table MO-27, Col. J, transcribed.

COL. E, Gypsum. Table MO-28, Col. A, times $3.86/ton (1954 price, from Table MP-36).

COL. F, Phosphate rock. Table MO-29, Col. C, times $6.16/long ton.

COL. G, Potash. Table MO-30, Col. A, times $37.4/ton ($K_2O$ content: *Min. Yearbook 1954,* Vol. I, p. 934).

COL. H, Sulfur. Table MO-31, Col. E, times $25.5/long ton.

COL. I, Fluorspar. Table MO-32, Col. E, times $48.3/ton.

COL. J, Salt. Table MO-33, Col. A, times $5.11/ton (*Min. Yearbook 1954,* Vol. I, p. 965, average value per ton, all salt including brine).

COLS. K and L, Output indicators, all nonmetals, 1902 and 1929 prices. Computed exactly as Col. M, except that 1902 and 1929 prices were used as weights in the computation. (For weights, see notes, below.)

COL. M, Output indicator, all nonmetals, 1954 prices. Sum, Cols. A through J, linked for missing series.

MO-20, NOTES

( ) Rough estimate.

*Less than $.5 million.

1954 prices are as calculated from *1954 Census of Mineral Industries* except where otherwise noted; the products of these prices times the quantities given in our individual-commodity quantity tables are aggregate value figures differing somewhat from Census aggregate values for 1954. (In other words, our quantity figures were not identical to those of Census.)

Cols. K and L. The weights used in the computation of the 1902- and 1929-weighted output indicators are as follows (sources same as given above for 1954, except as noted):

	Commodity	*1902 price weights*	*1929 price weights*
A	Stone	(see notes to Table MO-21)	
B	Cement rock	$.289/ton[a]	$.538/ton
C	Sand and gravel	.48/ton[b]	.63/ton
D	Clays	(see notes to Table MO-27)	
E	Gypsum	1.41/ton	2.15/ton
F	Phosphate rock	3.18/long ton	3.40/long ton
G	Potash	31/ton	52/ton
H	Sulfur	20.4/long ton[b]	18.5/long ton[c]
I	Fluorspar	5.75/ton	18.15/ton
J	Salt	1.70/ton	3.20/ton

[a] 1929 ratio of cement rock average value to crushed limestone average value (*1954 Census of Mineral Industries,* p. 14D-5) times the 1902 crushed limestone price, from Table MP-28.

[b] The 1905 weight was used, since there were no adequate data for 1902 (*Min. Resources 1905,* p. 1007 for sand and gravel, p. 1137 for sulfur).

[c] Source, *Min. Resources 1929,* Part II, p. 176.

MO-21. STONE (DIMENSION AND CRUSHED): Output

	Limestone	Granite	Basalt	Sandstone	Marble	Slate	Miscellaneous	All stone			
									Value ($ mil.)		
	(million dollars, 1954 prices)							Million tons	1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G	H	I	J	K
1870									(10)	(20)	(43)
1880									(23)	(44)	(95)
1889	45.8	109		76.5	21.5	14		25.8	63.3	123	267
1902	79.2	68.6		48.9	21.9	22		52.8	63.7	135	241
1903	81.1										
1904	82.6										
1905	90.3										
1906	92.6	68.5	9.4	38.5	24	21		68.3	70.6	149	255
1907	95.4	63.3	11.0	36.9	26	21		75.9	73.1	152	256
1908	84.9	70.0	11.0	33.9	27	21		68.9	70.4	146	249
1909	100	80.5	13.1	38.9	28	18		80.4	80.2	162	281
1910	107	79.9	16.3	35.2	30	20		91.1	85.5	174	291
1911	103	82.7	16.0	34.1	33	18		91.9	85.1	171	289
1912	111	76.4	16.3	31.7	34	19		93.8	85.4	174	291
1913	113	77.6	20.0	29.8	36	18		102	89.4	180	298
1914	96.9	79.0	17.3	31.5	35	17		89.4	81.8	165	279
1915	103	67.7	19.5	25.3	32.0	15.8		94.8	80.1	160	264
1916	116	78.2	18.6	28.3	33.1	14.8		101	86.4	173	291
1917	106	54.5	17.3	22.9	22.5	12.8		90.5	71.9	145	238
1918	83.6	41.1	12.7	13.2	17.3	10.3	1.2	75.4	55.0	108	178
1919	83.6	47.6	12.5	15.6	22.3	10.9	2.2	72.6	58.0	115	195
1920	98.2	51.3	15.0	16.1	25.3	11.3	2.0	86.1	66.3	132	219
1921	77.6	49.9	14.0	16.6	23.6	10.0	2.5	69.0	57.6	114	194
1922	104	50.0	16.7	21.1	29.9	13.7	3.9	88.1	71.1	144	239
1923	131	64.2	17.6	27.6	37.7	15.3	4.9	112	89.1	178	298
1924	131	66.9	19.0	25.5	39.3	14.5	5.2	112	90.1	180	302
1925	145	73.1	19.3	31.9	40.8	14.9	6.3	126	99.5	197	331
1926	155	72.3	21.5	23.1	41.1	14.6	5.6	135	102	203	333
1927	163	81.7	21.6	24.6	41.2	14.7	10.5	146	109	217	357
1928	163	74.5	25.0	22.7	42.1	14.1	8.3	144	108	215	349
1929	167	78.9	24.1	27.4	39.7	14.8	14.2	150	113	224	366
1930	153	63.6	23.5	24.6	34.5	10.4	11.3	135	99.4	199	321
1931	110	49.7	20.1	17.3	24.2	8.3	6.7	104	74.6	148	236
1932	75.2	31.3	15.0	10.4	22.2	5.4	10.5	75.0	54.0	105	170
1933	73.0	24.0	11.9	8.1	18.2	5.2	11.0	74.9	50.3	98.0	151
1934	88.9	29.8	18.7	10.3	10.4	4.6	14.0	97.0	61.2	118	177
1935	92.5	28.4	15.6	8.8	7.3	6.9	7.8	89.5	56.5	112	167
1936	135	46.6	22.6	17.2	12.0	10.0	9.4	139	86.7	169	253
1937	143	41.0	22.0	16.3	12.1	10.0	13.9	142	87.6	172	257
1938	124	39.8	22.3	17.4	11.5	9.8	16.2	132	82.7	161	241
1939	157	44.2	26.3	23.7	15.3	11.3	12.2	156	97.5	193	290
1940	173	39.8	25.2	18.0	11.7	10.0	10.5	164	98.5	196	288
1941	197	49.2	28.7	20.6	8.9	12.4	13.0	195	114	224	330
1942	205	39.1	28.3	19.8	6.7	9.7	17.8	208	117	226	326
1943	186	23.6	23.8	18.4	6.0	7.4	13.1	185	100	194	279
1944	167	21.0	22.5	15.6	7.0	7.2	13.9	169	92.0	178	254
1945	165	24.4	24.9	11.0	7.9	8.1	15.6	165	92.6	178	256
1946	195	35.6	26.5	12.9	10.1	11.2	14.4	190	109	211	306
1947	218	36.9	31.7	19.1	11.2	12.9	20.5	222	125	243	350
1948	241	43.0	33.4	20.5	11.3	13.1	20.2	240	136	265	383
1949	236	42.1	34.4	20.2	13.1	12.1	18.3	237	134	261	377
1950	264	52.4	36.8	25.8	12.0	15.3	20.4	267	153	295	426
1951	297	49.5	47.2	25.6	11.6	14.3	25.9	303	171	330	471
1952	311	50.7	47.8	26.7	11.7	12.5	26.7	318	177	341	487
1953	324	55.6	48.4	26.8	12.1	12.4	22.2	326	182	351	502
1954	338	56.6	49.7	35.3	13.8	13.0	18.5	334	187	365	525
1955	381	59.8	57.7	40.5	22.0	12.6	20.6	379	211	411	595
1956	399	61.8	61.3	43.3	19.5	10.8	29.6	406	225	434	625
1957	417	78.8	69.4	47.9	28.3	10.5	35.0	446	249	477	687

MO-21, SOURCES

COLS. A-G, Dimension stone output (Table MO-23) times 1954 dimension stone prices (Table MP-27), plus crushed and broken stone output (Table MO-22) times 1954 crushed and broken stone prices (Table MP-28).

COL. H, Table MO-22, Col. H, plus Table MO-23, Col. H.

COLS. I-K, Table MO-22, Cols. I-K, plus Table MO-23, Cols. I-K.

MO-21, NOTES

( ) Rough estimates, based in large part on reported employment and our employment/output estimates (see Tables ML-28 and ML-29).

For 1880, to the estimates given in Table MO-23 for dimension granite, marble, and slate we have added estimates of crushed granite (and basalt) and of all limestone and sandstone. These estimates were based on employment data for granite, limestone, and sandstone, plus employment/output ratios for these kinds of stone, extrapolated by the granite dimension stone employment/output data. The limestone estimate was linked at 1909 rather than 1889 because the 1889 granite employment/output ratio was relatively low, owing to the large proportion of dimension stone (which has a lower employment/output per million dollars of output), and was heavily weighted with paving blocks, a low employment/output form of dimension stone. The sandstone figure was linked at 1889, however, because it was a kind of stone whose output mix varied more closely with that of granite.

The 1870 estimate is based on an extrapolation of the 1880 employment/output estimate (derived from the above output estimate and Census employment data) by the movement of the employment/output ratios for marble and slate. The 1870 ratios for both marble and slate were about 82% as high as the 1880 ratios. While we suspect that these are inaccurate owing to underreporting of employment, they can serve as a basis for estimating 1870 stone output, on the assumption that underreporting was about equal in all kinds of stone and that employment/output ratios moved together. The 1870 output estimate is also dependent on an assumption that the output estimates for marble and slate are accurate, based as they are on value-of-output reports and estimated prices (see Table MO-23).

MO-22. CRUSHED AND BROKEN STONE: Output

	Limestone	Granite	Basalt	Sandstone	Marble	Slate	Miscellaneous	Total			
									Value ($ mil.)		
	(million tons)							Million tons	1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G	H	I	J	K
1889	14.8	1.44		1.74	.06			18.0	9.3	17.9	25.5
1902	36.4	(6.5)		(4.1)	(.2)			(47)	24.7	46.6	66.4
1903	38.4										
1904	40.0										
1905	46.5	5.4	5.2	3.9				61	32.3	62.6	85.8
1906	48.7	5.9	5.9	3.0				63	32.6	65.2	88.5
1907	53.7	7.4	6.9	3.2				71	38.1	73.3	99.2
1908	46.4	7.2	6.9	3.2				64	34.4	65.8	89.5
1909	56.5	7.2	8.2	3.2				75	40.2	77.5	105
1910	62.8	9.6	10.2	3.8				86	46.5	89.6	121
1911	61.4	11.3	10.0	4.2				87	47.1	90.0	122
1912	68.5	7.4	10.2	3.1				89	47.4	91.9	124
1913	73.3	8.5	12.5	3.7				98	52.4	102	137
1914	62.1	7.6	10.8	4.7				85	45.8	88.6	120
1915	66.8	8.0	12.2	3.8	.16			91.0	48.8	93.5	127
1916	74.0	7.78	10.14	4.09	.14			96.2	50.9	97.7	134
1917	69.7	4.48	9.00	3.40	.13			86.7	45.4	87.9	120
1918	59.8	2.87	6.71	2.55	.17	.28	.835	73.2	37.5	72.9	102
1919	55.7	3.10	7.30	2.19	.15	.20	1.16	69.8	35.8	69.3	97.0
1920	65.6	3.56	9.15	2.95	.23	.27	1.47	83.2	42.9	83.2	116
1921	49.9	3.59	8.46	2.16	.12	.23	1.66	66.1	34.5	66.4	92.5
1922	65.0	4.79	9.92	2.78	.18	.38	1.43	84.5	44.1	85.0	119
1923	83.4	5.85	10.6	3.55	.26	.46	3.70	108	56.0	108	151
1924	82.5	5.35	11.6	3.14	.19	.51	4.30	108	56.1	108	151
1925	93.2	6.41	11.7	3.50	.23	.50	5.22	121	62.7	120	167
1926	99.3	7.74	12.8	4.43	.23	.50	4.74	130	67.4	129	180
1927	107.0	8.92	13.1	4.44	.27	.46	7.01	141	73.3	140	195
1928	104.0	7.92	15.2	4.16	.24	.41	6.79	139	72.1	138	191
1929	107.5	9.12	14.8	5.13	.23	.43	8.18	145	75.7	145	201
1930	93.6	8.72	14.5	3.95	.20	.29	8.53	130	67.8	129	178
1931	71.1	7.04	12.5	4.25	.16	.23	5.61	101	53.0	101	140
1932	50.3	4.47	9.32	2.80	.16	.21	5.81	73.1	38.6	73.4	102
1933	49.8	3.95	7.38	2.71	.08	.19	9.43	73.5	38.7	73.0	100
1934	61.7	6.25	11.6	3.50	.10	.17	12.3	95.6	50.7	95.2	130
1935	62.7	5.48	9.64	2.91	.08	.23	6.82	87.9	46.0	87.4	120
1936	94.4	14.8	14.0	6.09	.07	.29	7.76	137	72.5	136	190
1937	102.1	8.51	13.6	4.84	.11	.28	10.4	140	72.5	138	190
1938	87.7	9.76	13.9	6.15	.13	.35	12.2	130	68.8	130	179
1939	108.3	11.3	16.0	8.66	.10	.35	9.30	154	80.5	153	214
1940	121.4	10.2	15.7	6.33	.15	.32	7.66	162	83.6	160	221
1941	143.0	13.5	17.9	7.41	.11	.44	9.85	193	99.5	190	263
1942	154.2	13.5	17.6	6.47	.12	.48	14.8	207	107	204	280
1943	141.9	8.96	14.3	7.31	.12	.40	11.1	184	94.2	181	251
1944	128.2	7.11	14.0	6.35	.10	.42	12.0	168	86.3	166	229
1945	124.0	7.38	14.7	4.32	.11	.48	13.6	164	85.1	162	223
1946	146.2	10.6	16.4	4.09	.13	.66	12.1	189	98.3	188	258
1947	163.5	11.9	19.6	6.62	.14	.76	18.0	220	114	218	300
1948	180.6	13.0	20.6	7.09	.19	.66	16.8	238	123	236	325
1949	175.7	16.5	21.4	6.73	.14	.61	14.7	235	122	233	321
1950	195.1	22.0	22.9	8.84	.18	.76	16.3	265	139	263	364
1951	221.2	20.6	29.4	8.50	.17	.65	21.2	301	157	298	409
1952	232.6	21.8	29.6	8.30	.15	.59	22.5	316	163	310	426
1953	243.2	22.9	30.0	8.30	.38	.55	19.0	324	168	319	439
1954	248.7	22.8	30.8	11.7	.45	.61	16.3	331	171	327	453
1955	282.2	25.5	35.8	12.9	.98	.62	17.7	376	194	371	517
1956	298.3	29.1	38.0	12.8	.84	.53	23.8	403	209	397	550
1957	310.7	41.1	43.1	15.7	1.27	.51	30.5	443	232	437	608

MO-22, SOURCES

COL. A, Limestone

1889. Estimated from Census data: Table MO-23, Worksheet 1.

1902-16. From Worksheet 2 of this table.

1917-39. Barger & Schurr, Table A-1, (16) Nondimension stone, (D) Nondimension limestone (incl. limestone used for lime).

1940-53. *Min. Yearbooks,* stone chapters, tables on limestone (crushed and broken stone) sold or used by producers, total, plus estimate of limestone used for lime (2 times lime tonnage: cf. *Min. Yearbook 1954,* Vol. I, p. 1104, Table 31, footnote 6) from lime sections less limestone used in making portland and natural cement, from table on limestone for miscellaneous uses.

1954-57. Same source, but *without* addition for lime (not needed), and minus limestone used for portland and natural cement (from table on limestone for miscellaneous uses).

COL. B, Granite

1889. Table MO-23, Worksheet 2.

1902. Worksheet 1 of this table.

1905-17 (including rubble). Quantities of crushed stone for roads, railroad ballast, and concrete as given in *Min. Resources* tables. Quantities of broken stone estimated from value totals of rubble, riprap, and "other," by extrapolating average value of 1916 by average value of crushed granite.

1918-39. Barger & Schurr, *loc. cit.,* (C) Nondimension granite (excluding rubble).

1940-57. *Min. Yearbooks,* stone chapters, tables on granite (crushed and broken stone) sold or used by producers, total.

COL. C, Basalt

1889-1902. See Granite, above.

1905-17 (including rubble). Source same as granite.

1918-39. Barger & Schurr, *loc. cit.,* (A) Nondimension basalt (excluding rubble).

1940-57. *Min. Yearbooks,* stone chapters, tables on basalt and related rocks (crushed and broken stone) sold or used by producers in the United States, total.

COL. D, Sandstone

1889. Table MO-23, Worksheet 3.

1902. Worksheet 1 of this table.

1905-17 (including rubble). Same as granite, except that broken stone includes ganister.

1918-39. Barger & Schurr, *loc. cit.,* (F) Nondimension sandstone.

1940-57. *Min. Yearbooks,* stone chapters, tables on sandstone (crushed and broken stone) sold or used by producers, total.

COL. E, Marble

1889. Table MO-23, Worksheet 4.

1902. Worksheet 1 of this table.

1915-39. Barger & Schurr, Table A-1, (15) Dimension stone, (D) Nondimension marble.

1940-57. *Min. Yearbooks,* stone chapters, tables on marble (crushed and broken stone) sold by producers in the United States, short tons.

COL. F, Slate

1918-39. Barger & Schurr, *loc. cit.,* (G) Nondimension slate.

1940-57. *Min. Yearbooks,* slate chapters, tables on salient statistics of the slate industry: quantity, granules and flour.

COL. G, Miscellaneous stone

1918-39. Barger & Schurr, *loc. cit.,* (G) Miscellaneous nondimension stone, transcribed.

1940-57. *Min. Yearbooks,* slate chapters, tables on miscellaneous varieties of stone (crushed and broken stone) sold or used by producers, total.

COL. H, Sum of Cols. A through G.

COL. I. Sum of Cols. A through G, each weighted by 1902 prices as given in Table MP-28 (misc. stone price extrapolated from 1909 to 1902 by limestone price).

COL. J, Sum of Cols. A through G, each weighted by 1929 prices as given in Table MP-28.

COL. K, Sum of Cols. A through G, each weighted by 1954 prices as given in Table MP-28.

MO-22, NOTES

( ) Estimate (see Worksheet 1 of this table).

These data cover output of all quarries. Included are the following outputs of noncommercial (chiefly government) quarries, as reported in the *Minerals Yearbooks* (in millions of tons):

1929	7.2
1930	7.6
1931	7.8
1932	8.7
1933	7.7
1934	17.3
1935	16.7
1936	29.8
1937	29.3
1938	37.2
1939	49.4
1940	41.2
1941	38.1
1942	19.4
1943	10.0
1944	9.5
1945	7.3
1946	7.9
1947	14.2
1948	16.6
1949	18.9
1950	21.2
1951	26.3
1952	22.8
1953	26.1
1954	22.4
1955	31.3
1956	33.1
1957	55.2

About 0.1 million tons of the above amounts were dimension stone (building stone and rubble).

MO-22, WORKSHEET 1. STONE OUTPUT ESTIMATES BASED ON 1902 CENSUS DATA

Kind of stone	Value reported ($1,000)	Estimate of average price	Resultant quantity estimate	Explanation and source of average price estimate
Limestones				
Dimension:				Extrapolated from 1906 price (Table MP-27) by price of slate shingles (which moved same as nondimension limestone, and as Bureau of Labor Statistics general wholesale price index).
Building	5,563			
Curbing	332			
Flagging	242			
Total	6,137	at $3.18/ton	= 1,930,000 tons	
Crushed and broken: See Worksheet 2 of this table.				
Granite and basalt				
Dimension:				Extrapolated from 1904 price (Table MP-27) by price of slate shingles.
Rough	4,433			
Dressed:				
Building	4,860			
Monumental	2,285			
Curbing and flagging	877			
Paving blocks	1,524			
Total	13,979	at $9.10/ton	= 1,540,000 tons	
Crushed and broken:				Extrapolated from 1905 price (Table MP-28) by price of crushed and broken limestone (see Worksheet 2 of this table).
Crushed	3,212			
Riprap	319			
Rubble	500			
Other	249			
Total	4,280	at $0.66/ton	= 6,500,000 tons	
Sandstones				
Dimension:				Extrapolated from 1916 price (Table MP-27) by price of dimension granite.
Rough building	3,119			
Dressed building	2,888			
Curbing and flagging	1,815			
Paving blocks	528			
Total	8,350	at $5.10/ton	= 1,600,000 tons	
Crushed and broken:				
Crushed	1,116			Extrapolated from 1905 price (Table MP-28) by price of limestone flux.
Riprap	269			
Rubble	646			
Other	219			
Total	2,250	at $0.55/ton	= 4,090,000 tons	
Marble				
Rough and dressed	5,044	at $2.30/cu. ft.	= 2,190,000 cu. ft. = 185,000 tons	Price estimate based on 1911 price plus consideration of proportion of total 1902 value of output coming from Vermont (high price in all years 1911-16), Georgia (low price), and Tennessee (intermediate price). 1 ton = 11.8 cu. ft.
Slate				
Roofing		1,435,000 "squares"	= 474,000 tons	Min. Resources 1922, Part II, p. 167, gives 479,000 squares = 161,700 tons, or 1 square = .338 ton, or 676 lb. Min. Resources 1907, Part II, gives approximate weight of 650 lb. per square.
Other slate: $746,000 worth		at $.136/sq. ft.	= 5,500,000 sq. ft. = 35,000 tons	1907 price of other slate ($.149/sq. ft.) from Min. Resources 1907, Part II, p. 559; extrapolated to 1902 by price of roofing slate (*ibid.*, p. 560). Tons per square foot taken as same as 1921-22 average, calculated from Min. Resources 1922, Part II, p. 167: 6,400 tons per million square feet.

MO-22, WORKSHEET 2. CRUSHED AND BROKEN LIMESTONE, 1902-16

	Crushed stone			Flux			Other		
	Quantity (mil. tons)	Value ($ mil.)	Av. value ($/ton)	Quantity (mil. tons)	Value ($ mil.)	Av. value ($/ton)	Quantity (mil. tons)	Value ($ mil.)	Av. value ($/ton)
1902	13.8	7.15	.518	13.6	5.27	.388	3.8	2.33	.610
1903	15.9	8.58	.538	13.5	3.42	.403	3.7	2.36	.634
1904	18.2	9.56	.526	11.9	4.70	.394	4.5	2.80	.620
1905	19.3	10.49	.542	17.2	7.00	.406	4.0	2.58	.639
1906	20.3	11.07	.546	18.0	7.61	.423	4.1	2.61	.643
1907	23.5	13.67	.581	19.2	9.14	.477	4.9	3.33	.685
1908	22.9	12.91	.563	12.4	5.90	.475	5.6	3.71	.663
1909	26.3	15.05	.572	17.7	7.92	.448	5.7	3.85	.674
1910	29.9	15.66	.528	20.4	9.35	.458	5.9	3.65	.622
1911	30.4	16.55	.543	18.1	7.99	.442	6.2	3.98	.640
1912	33.1	17.62	.532	22.6	9.94	.439	5.9	3.67	.627
1913	35.2	19.07	.542	25.3	11.10	.438	5.8	3.70	.639
1914	32.7	18.06	.553	17.1	7.89	.460	5.8	3.80	.652
1915	31.6	17.10	.541	21.3	9.67	.455	6.7	4.29	.637
1916	32.2	17.72	.550	26.4	13.94	.527	7.6	4.95	.648

	Broken stone (not incl. stone for lime)			Stone for lime (not otherwise included)			Broken stone (incl. stone for lime)		
	Quantity (mil. tons)	Value ($ mil.)	Av. value ($/ton)	Quantity (mil. tons)	Value ($ mil.)	Av. value ($/ton)	Quantity (mil. tons)	Value ($ mil.)	Av. value ($/ton)
1902	31.2	14.76	.473	5.2	2.01	.388	36.4	16.77	.460
1903	33.1	16.35	.494	5.1	2.05	.403	38.4	18.40	.480
1904	34.6	17.06	.493	5.4	2.12	.394	40.0	19.18	.479
1905	40.6	20.07	.494	5.9	2.40	.406	46.5	22.47	.483
1906	42.3	21.30	.503	6.3	2.68	.423	48.7	23.98	.492
1907	47.6	26.15	.550	6.1	2.92	.477	53.7	29.07	.541
1908	40.9	22.52	.550	5.5	2.60	.475	46.4	25.12	.541
1909	49.7	26.83	.540	6.9	3.08	.448	56.5	29.91	.528
1910	55.9	28.66	.513	6.8	3.14	.458	62.8	31.80	.506
1911	54.7	28.51	.521	6.6	2.93	.442	61.4	31.45	.512
1912	61.6	31.23	.507	6.8	3.01	.439	68.4	34.24	.500
1913	66.3	33.88	.511	6.9	3.05	.438	73.3	36.93	.504
1914	55.6	29.75	.535	6.5	3.00	.460	62.1	32.75	.526
1915	59.6	31.07	.521	7.2	3.27	.455	66.8	34.33	.514
1916	66.3	36.69	.552	7.7	4.05	.527	73.9	40.66	.549

MO-22, Worksheet 2, SOURCES

Mineral Resources of the United States:

Crushed stone (for macadam, concrete, and railroad ballast) data for 1905-16 from tables on quantity and value of crushed stone produced in the United States, by kinds and uses. 1902-04 from tables on value of production of limestone by states and uses; average price extrapolated by flux price; quantity estimated from value and price.

Flux data from tables on production of blast-furnace flux, by states.

"Other" includes rubble, riprap, and limestone for agriculture, sugar factories, and other purposes. Value data from table on value of production of limestone, by states and uses; average price extrapolated from 1916 to 1902 by price of crushed limestone; quantity estimated from value and average price.

Stone for lime data (not included in "other" sold by quarries to lime burners): 1904-16 estimated from quantity of lime produced. 1902-03 estimated from value of lime produced; price taken same as flux stone.

MO-23. DIMENSION STONE: Output

	Limestone	Granite	Basalt	Sandstone	Marble	Slate	Miscellaneous	Total			
								Million tons	Value ($ mil.)		
	(million tons)								1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F	G	H	I	J	K
1870					[a].04	[a].12					
1879						.14					
1880			[a].90		[a].11	.18					
1881						.18					
1882						.19					
1883						.20					
1884						.19					
1885						.21					
1886						.21					
1887						.22					
1888						.26					
1889	[a]1.6		[a]2.8		[a]2.9	[a].177	.33		7.8	54	105	242
1890							(.34)				
1891							.35				
1892							.37				
1893							.23				
1894							.29				
1895							.27				
1896							.26				
1897							.37				
1898							.35				
1899							.41				
1900							.45				
1901							.49				
1902	[a]1.93		[a]1.54		[a]1.6	[a].18	.53		5.8	39	88	175
1903							.52				
1904							.48				
1905							.48				
1906	1.79	1.56	N	[a]1.3	(.21)	.49	N	5.3	38	84	167
1907	1.58	1.37	N	[a]1.2	(.22)	.49	N	4.9	35	79	157
1908	1.51	1.55	N	[a]1.1	(.23)	.50	N	4.9	36	80	160
1909	1.66	1.82	N	[a]1.3	[a].24	.42	N	5.4	40	85	176
1910	1.56	1.72	N	[a]1.1	(.26)	.48	N	5.1	39	84	170
1911	1.43	1.73	N	[a]1.0	[b].28	.44	N	4.9	38	81	167
1912	1.39	1.71	N	[a]1.0	.29	.46	N	4.8	38	82	167
1913	1.16	1.70	N	[a].88	.31	.44	N	4.5	37	78	161
1914	1.03	1.77	N	[a].86	.30	.41	N	4.4	36	76	159
1915	1.01	1.46	N	[a].69	.263	.378	N	3.80	31.3	67	137
1916[c]	.97	1.49	.093	.58	.274	.354	N	3.76	31.1	65	135
1916[d]	1.27	1.74	.352	.784	.274	.354	N	4.78	35.5	75	157
1917	.999	1.25	.425	.626	.184	.305	N	3.79	26.5	57	118
1918	.420	.961	.150	.312	.136	.174	.010	2.16	17.5	35	76
1919	.728	1.12	.111	.435	.180	.207	.033	2.81	22.2	46	98
1920	.843	1.20	.066	.393	.200	.200	.014	2.92	23.4	49	103
1921	.812	1.16	.069	.480	.194	.180	.025	2.92	23.1	48	102
1922	1.24	1.12	.116	.607	.243	.228	.089	3.64	27.0	59	120
1923	1.43	1.45	.087	.801	.304	.245	.034	4.35	33.1	70	147
1924	1.50	1.54	.058	.754	.324	.215	.023	4.41	34.0	72	151
1925	1.54	1.66	.095	.981	.333	.227	.025	4.86	36.8	77	164
1926	1.66	1.59	.140	.544	.336	.220	.017	4.51	34.3	74	153
1927	1.52	1.79	.091	.606	.334	.232	.107	4.68	36.1	77	162
1928	1.77	1.64	.097	.553	.343	.232	.038	4.67	35.5	77	158
1929	1.70	1.71	.052	.656	.324	.241	.200	4.88	37.0	79	165
1930	1.94	1.33	.039	.644	.282	.174	.078	4.49	31.6	70	143
1931	1.12	1.03	.021	.327	.196	.138	.022	2.85	21.6	47	96
1932	.641	.648	.013	.172	.179	.075	.157	1.89	15.4	32	68
1933	.551	.477	.010	.090	.150	.073	.030	1.38	11.6	25	51
1934	.586	.543	.011	.107	.082	.067	.028	1.42	10.5	23	47
1935	.723	.536	.031	.101	.057	.104	.014	1.57	10.5	25	47
1936	.805	.667	.037	.162	.098	.165	.039	1.97	14.2	33	63
1937	.714	.751	.025	.232	.096	.168	.064	2.05	15.1	34	67
1938	.704	.673	.022	.166	.089	.144	.112	1.91	13.9	31	62
1939	1.06	.734	.101	.196	.124	.180	.084	2.48	17.0	40	76
1940	1.082	.658	.022	.172	.089	.154	.083	2.26	14.9	36	67
1941	.814	.782	.010	.183	.069	.181	.089	2.13	15.0	34	67
1942	.463	.522	.013	.233	.049	.107	.068	1.46	10.3	22	46
1943	.237	.284	.125	.101	.043	.073	.041	.90	6.2	13	28
1944	.162	.284	.018	.074	.052	.061	.029	.68	5.7	12	25
1945	.334	.362	.204	.064	.060	.070	.035	1.13	7.5	16	33
1946	.504	.535	.050	.161	.077	.096	.047	1.47	10.8	23	48
1947	.543	.522	.039	.188	.086	.113	.042	1.53	11.3	25	50
1948	.607	.639	.058	.204	.083	.141	.080	1.81	13.1	29	58
1949	.680	.486	.035	.226	.102	.132	.090	1.75	12.5	28	56
1950	.808	.555	.037	.266	.089	.169	.104	2.03	13.9	32	62
1951	.807	.532	.033	.291	.087	.171	.112	2.03	13.8	32	62
1952	.787	.519	.058	.352	.089	.146	.091	2.04	13.6	31	61
1953	.799	.604	.059	.354	.076	.153	.065	2.11	14.0	32	63
1954	1.174	.634	.052	.401	.085	.152	.035	2.53	15.8	38	72
1955	1.182	.617	.060	.504	.116	.141	.055	2.68	17.0	40	78
1956	1.029	.540	.072	.624	.105	.119	.146	2.64	16.4	37	75
1957	1.131	.539	.061	.555	.149	.120	.079	2.63	17.2	40	79

MO-23, SOURCES

COL. A, Limestone

1889. Worksheet 1 of this table.

1902. Table MO-22, Worksheet 1.

1906-16 (first figure). Estimated from value of output and price. Value of output from tables in various volumes of *Min. Resources* (Part II) entitled "Value of granite, trap rock, sandstone, limestone, and marble used for various purposes," sum of data for building, monumental, flagstone, curbstone and paving stone. Price estimated by linking Indiana (Bedford district) price, from *Min. Resources* 1906-16, Part II, to U.S. price at 1916 (see Table MP-27).

1916 (second figure)-39. Barger & Schurr, Table A-1, (B) Dimension limestone.

1940-57. *Min. Yearbooks,* stone chapters, tables on limestone, total quantity.

COL. B, Granite

1880. Extrapolated by *1880 Census,* "Product: cubic feet," assuming same proportions of dimension and broken stone as in 1889. Also checks with total reached by use of 1889 average-price method (see Worksheet 2 of this table).

1889. Worksheet 2 of this table.

1902. Table MO-22, Worksheet 1.

1906-16 (first figure). Estimated from value of output and price. Source of value same as for limestone. Price extrapolated by data for 5 states (see Table MP-27).

1916 (second figure)-39. Barger & Schurr, Table A-1, (15) Dimension stone: (A) Dimension granite

1940-57. *Min. Yearbooks,* stone chapters, tables on dimension stone sold or used by producers in the United States, by kinds and uses: granite, total quantity.

COL. C, Basalt

1880, 1889, 1902. See COL. B, Granite, sources above.

1916-39. Barger & Schurr, Table A-1, (16) Nondimension stone: (B) Dimension basalt.

1940-57. *Min. Yearbooks,* stone chapters, tables on dimension stone: basalt, total quantity.

COL. D, Sandstone

1889. Worksheet 3 of this table.

1902. Table MO-22, Worksheet 1.

1906-16 (first figure). Estimated from value of output and price. Source of value same as for limestone. Price for 1916 (first figure) from *Min. Resources 1917,* Part II. 1906-15 extrapolated by granite prices (see Table MP-27).

1916 (second figure)-39. Barger & Schurr, *loc. cit.,* (E) Dimension sandstone.

1940-57. *Min. Yearbooks,* stone chapters, tables on sandstone, total quantity.

COL. E, Marble

1870. Extrapolated from 1880 by value of product including crushed (given by Census for 1870, estimated by us for 1880); price assumed ⅓ higher than in 1880, in line with general wholesale price index and with mineral prices available.

1880. Estimated by division of data for "marble and limestone," as reported in *1880 Census,* by data for Vermont, Tennessee, New York, and Maryland—apparently the only states which produced marble in 1880. Some use was made of average prices of marble in 1889 for each state (see Worksheet 4 of this table).

1889. See Worksheet 4 of this table.

1902. Table MO-22, Worksheet 1.

1909. Rough estimate, based on value of output of marble (*Min. Resources 1909,* Vol. II, p. 604) and price estimate of Table MP-27.

1911-39. Barger & Schurr, *loc. cit.,* (C) Dimension marble.

1940-57. *Min. Yearbooks,* stone chapters, tables on marble, total quantity.

COL. F, Slate

1870. Extrapolated from 1880 by value of product (Census), assuming price in 1870 was ⅓ higher, in line with the general wholesale index and with prices of other minerals (coal, metals).

1879-1908. *Min. Resources 1912,* Vol. II, p. 682, "squares" of shingles converted to tons on basis of 3 squares = 1 ton; addition of 11% to 22% made for other slate, on basis of value reported or estimated, assuming a price per ton 20% higher than that of roofing slate (based on data in *Min. Resources 1921,* Vol. II, p. 26).

1909-39. Barger & Schurr, *loc. cit.,* (F) Dimension slate.

1940-57. *Min. Yearbooks,* slate chapters, tables on salient statistics of the slate industry in the United States, total slate as dimension stone.

COL. G, Miscellaneous

1918-39. Barger & Schurr, *loc. cit.,* (H) Miscellaneous dimension stone.

1940-57. *Min. Yearbooks,* stone chapters, tables on miscellaneous stone, total quantity.

COL. H, Total of Cols. A through G.

COLS. I and J. Computed exactly as COL. K, except that 1902 and 1929 prices (from Table MP-27) were used as weights.

COL. K, Sum of Cols. A through G, each weighted by 1954 prices as given in Table MP-27 (miscellaneous stone weighted by average price of limestone, granite, and sandstone).

MO-23, NOTES

( ) Rough interpolation.

N. Negligible.

[a] Rough estimate.

[b] Excludes 1,510,000 cu. ft. (= 129,000 tons) sold for "other purposes" at an average price of 10.6¢ per cubic foot (*Min. Resources 1912,* Part II, p. 752).

[c] Excludes rubble.

[d] Includes rubble.

MO-23, WORKSHEET 1. 1890 Census: Limestone

Our estimates of the output of dimension stone and crushed and broken stone are based on information (by states) on man-days of labor and volume and value of output of (1) lime, (2) stone for lime, (3) stone for flux, and stone for the following purposes: (4) "building," (5) "street work," (6) "bridge, dam, and railroad work," (7) "miscellaneous."

The first three categories clearly belong with crushed and broken stone; the latter four are apparently mixtures of dimension and broken stone: "building purposes" include not only pilasters but foundations; "street work" includes basin heads and macadam; "bridge, dam, and railroad work" includes aqueducts and track ballast.[1] We have therefore estimated the proportions of dimension and nondimension stone, state by state, for each of the latter four categories, on the basis of the average price for each category for each state, as described below.

The multiple correlation coefficient of labor input on the resultant estimates for output of dimension limestone, broken limestone, and lime, by state is .98. This indicates a good probability that our allocations of the proportions of output in dimension stone and broken stone are reasonably close.[2]

In making these allocations, we have used a price of 1.0¢ per cubic foot for broken stone and 15¢ per cubic foot for dimension stone. These prices are "deflated" for the average wage and profit level in each state,[3] so as to reflect as nearly as possible the labor (and machinery work) input in producing the rock in each case.

The allocations were made by algebraic calculation, using the following simultaneous equations:

(1) $C + D = 1$

(2) $1.0C + 15D = P$

This simplifies, by subtracting (1) from (2), into $D = \frac{P - 1}{14}$

C = the fraction of the limestone produced in a particular category ("building purposes," "street work," etc.) in a particular state which is to be estimated as crushed or broken stone.

D = the fraction in each category in each state which is to be estimated as dimension stone.

P = the average "deflated" price of limestone in that category for that state, given by dividing the total "value" by the number of "cubic feet." (Solid dimension stone and loose broken stone were mixed in the summation, apparently). The results of these calculations are given in the first four columns of Table (2), p. 396.

For a simple example of the reasoning and arithmetic involved, see Marble (p. 405.)

It should be noted that not all these calculation have had clerical checks, so a few minor errors are probable.

The bases for the estimate of 1.0¢/cu. ft. (21.5¢/ton[4]) ("deflated" price; this is equivalent to 44¢/ton "undeflated") are:

(1) "Stone for burning into lime" and "flux for furnaces" sold for 38¢ and 40¢ per ton (U.S. average), respectively. "Deflated" for wages for $1.55 per day, and for profits of 24%, a price of 38¢ becomes 18.6¢. Converted into cubic feet on the basis of 93 lb./cu. ft., the price becomes 0.87¢ per cubic foot.

(2) The lowest price observed for sizable quantities of stone for any purpose for any state is about 1¢ deflated; in several cases, however, the price runs below 1.5¢ (see entries in Table (1), opposite).

The considerations which lead us to an estimate of roughly 15¢ per cubic foot ($2.00/ton)[5] for an average "deflated" price of dimension stone are as follows:

(1) *Min. Resources 1897* (Part VI, Vol. 2, p. 295) gives 20¢ as the 1893 price of Bedford (Indiana) limestone in rough blocks. This source also gives average prices for stone produced in the Indiana limestone district for 1894-97 running from 22.1¢ to 28.4¢. The average for this district's dimension stone in 1889 may well have been higher, as 1889 represented something of a peak in business conditions for this industry. If, however, we take 25¢ as an average, and deflate by the average wage in Indiana ($1.26) and the average profit (subtracting 25%, the average ratio of profits to value of product), we get 15¢ per cubic foot as a deflated average price for Indiana, the chief producer of dimension limestone in this period.

(2) The U. S. average price in 1916, the earliest year for which we have a national average, was 41¢ per cubic foot, while Bedford district stone sold by the cubic foot averaged 40¢. In 1917, the averages were 48¢ and 48¢. This is an indication that the Bedford district price was near the national average for "building stone."

(3) The highest "deflated" prices paid for limestone in categories which might perhaps include only dimension stone for a particular state are in the range 12¢-17¢ per cubic foot (see Table (1) below).

(4) The earliest data we have giving prices for dimension and broken stone indicate levels for dimension stone 8 or 9 times the level for broken stone.[6] Our price of $2.00 for dimension stone is 9⅓ times the price of 21.5¢ for broken stone.

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[1] *1890 Census of Mineral Industries*, p. 604. The descriptive table given there is for granite, but the same classifications were presumably used for limestone.

[2] There are of course defects in this indicator: No allowance is made for *degree* of fabrication: dimension stone sold as finished pillars or cornerstones would sell for much more than rough blocks sold for further processing. This defect appears in all our data for all years and is no doubt a major cause of fluctuations in average price and average employment/output ratio of each and all kinds of dimension stone, from year to year.

[3] See Table (1) below. The deflating factor, "K," is simply the reciprocal of the average daily wages, multiplied by the percentage which costs bear to value of output. See rationale in text on granite, Worksheet 2 of this table.

[4] Calculated at 2,500 lb./cu. yd., approximate average given in *Min. Resources 1916*, Vol. II, pp. 1075-78. This is 93 lb./cu. ft., or 21.5 cu. ft. of (loose) stone per ton.

[5] Calculated at 150 lb./cu. ft., which is the approximate weight indicated by data in *Min. Resources 1924*, Part II, p. 284. This is 13⅓ cu. ft./ton. The equivalent "undeflated" price is $4.08/ton.

[6] See *Min. Resources* 1909, Part II, p. 599, where limestone sold in the Bedford (Indiana) district is listed about 8 times as high by the cubic foot as by the ton, for 1907 and 1908; *Min. Resources 1917*, Part II, p. 649, where building stone average price is listed as $4.95 per ton and crushed stone 55¢ per ton for 1916 (.55 × 9 = $4.95).

Limestone Table (1): Prices and "Deflation"

State	Average price per cu. ft. ($)				Average wages per day ($)	Profit (%)	Deflator	Deflated price ($)			
	1	2	3	4	A	B	K	1	2	3	4
Ala.	.246	.100	–	–	1.15	20	.696	.171	.070	–	–
Ark.	.138	.250	.020	.100	1.37	21	.577	.080	.144	.011	.058
Calif.	.029	.040	–	.061	2.28	31	.303	.009	.012	–	.018
Colo.	.130	–	–	–	2.75	32	.247	.032	–	–	–
Conn.	.026	–	–	–	1.72	18	.478	.012	–	–	–
Idaho	–	–	–	–	2.30	39	.265	–	–	–	–
Ill.	.051	.049	.068	.148	1.77	22	.441	.022	.022	.030	.065
Ind.	.134	.121	.166	.103	1.26	25	.595	.080	.072	.099	.061
Iowa	.038	.031	.041	–	1.46	19	.555	.021	.017	.023	–
Kans.	.059	.126	.041	–	1.49	24	.510	.030	.064	.021	–
Ky.	.101	.049	.216	3.33	1.54	20	.519	.052	.025	.112	1.73
Maine	–	–	–	–	2.31	3	.420	–	–	–	–
Md.	.027	.046	.041	–	1.22	16	.689	.019	.032	.028	–
Mass.	.077	–	–	.040	2.04	20	.392	.030	–	–	.016
Mich.	.036	.037	–	–	1.37	32	.496	.018	.018	–	–
Minn.	.052	.171	.104	.074	1.71	19	.474	.025	.081	.049	.035
Mo.	.049	.058	.031	.200	1.59	18	.516	.025	.030	.016	.103
Mont.	.047	–	–	–	2.38	18	.345	.016	–	–	–
Nebr.	.044	.045	.250	.011	1.81	21	.436	.019	.020	.109	.005
N.J.	.023	–	–	–	1.28	16	.656	.015	–	–	–
N. Mex.	.024	–	–	–	1.78	22	.438	.011	–	–	–
N.Y.	.062	.038	.123	–	1.64	26	.451	.028	.017	.055	–
Ohio	.042	.025	.025	.083	1.41	25	.532	.022	.013	.013	.044
Pa.	.046	.035	.042	.111	1.37	18	.599	.028	.021	.025	.066
R.I.	–	–	–	–	1.52	19	.533	–	–	–	–
S.C.	–	–	.148	–	1.02	21	.774	–	–	.115	–
Tenn.	.116	.234	.042	–	1.13	30	.619	.072	.145	.026	–
Tex.	.204	.476	.048	–	1.81	48	.287	.059	.137	.014	–
Utah	.022	–	–	–	2.14	29	.332	.007	–	–	–
Vt.	.053	.210	.041	.417	1.41	27	.518	.027	.109	.021	.216
Va.	.041	.025	–	–	1.19	27	.613	.025	.015	–	–
Wash.	.099	–	–	–	3.87	9	.235	.023	–	–	–
W. Va.	.020	–	.014	–	1.09	45	.505	.010	–	.007	–
Wis.	.051	.057	.011	–	1.54	24	.494	.025	.028	.005	.005
Other	.071	–	.056	–	2.20	38	.282	.020	–	.016	–
Averages (weighted)					1.55	24	.490				

Limestone Table (2): Amounts of Dimension and Crushed Stone

State	Estimated % dimension stone				Dimension stone (1000 cu. ft.)					Crushed stone (1000 cu. ft.)				
	1	2	3	4	1	2	3	4	Total	1	2	3	4	Total
Ala.	100	43	–	–	154	42	–	–	196	–	56	–	–	56
Ark.	50	96	–	34	5	2	–	5	11	4	–	32	9	46
Calif.	–	–	–	6	–	–	–	2	2	12	35	–	29	77
Colo.	16	–	–	–	9	–	–	–	9	47	–	–	–	47
Conn.	1	–	–	–	–	–	–	–	–	33	–	–	–	33
Idaho	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ill.	9	9	14	39	184	879	138	5	2,866	1,959	9,342	831	8	29,772
Ind.	50	44	64	36	3,701	1,158	897	11	5,768	3,701	1,456	513	20	5,691
Iowa	8	5	9	–	496	854	161	–	743	578	1,622	1,571	–	8,979
Kans.	14	39	8	–	652	298	200	–	1,150	3,910	473	2,332	–	6,716
Ky.	30	11	73	100	556	189	11	–	756	1,298	1,574	4	–	2,876
Maine	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Md.	6	16	13	–	3	23	6	–	31	39	123	38	–	200
Mass.	14	–	–	4	40	–	–	2	42	243	–	–	48	290
Mich.	6	6	–	–	74	28	–	–	102	1,223	458	–	–	1,680
Minn.	11	51	28	18	779	35	242	16	1,071	6,499	34	626	72	7,230
Mo.	11	14	4	66	1,186	1,651	235	20	3,092	9,897	9,892	5,236	10	25,036
Mont.	4	–	–	–	7	–	–	–	7	153	–	–	–	153
Nebr.	6	7	71	–	132	137	7	–	276	1,927	1,789	3	56	3,775
N.J.	4	–	–	–	1	–	–	–	–	27	–	–	–	27
N. Mex.	1	–	–	–	–	–	–	–	–	49	–	–	–	49
N.Y.	13	5	32	–	923	262	460	–	1,645	6,232	4,979	974	–	12,185
Ohio	9	2	2	24	839	152	105	42	1,138	8,916	7,085	4,880	132	21,013
Pa.	13	8	11	40	669	161	397	24	1,252	4,519	1,881	3,317	36	9,753
R.I.	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S.C.	–	–	75	–	–	–	42	–	42	–	–	14	–	14
Tenn.	44	96	11	–	5	14	13	–	32	6	–	102	–	109
Tex.	35	91	3	–	233	61	18	–	313	433	6	620	–	1,060
Utah	–	–	–	–	–	–	–	–	–	121	–	–	–	121
Vt.	12	71	8	100	11	7	35	2	56	83	3	410	–	497
Va.	11	4	–	–	50	–	–	–	51	421	7	–	–	428
Wash.	9	–	–	–	1	–	–	–	1	14	–	–	–	14
W. Va.	–	–	–	–	–	–	–	–	–	194	–	25	–	219
Wis.	11	13	–	–	485	63	–	–	587	4,052	426	2,049	–	6,527
Other	7	–	4	–	–	–	6	–	6	–	–	124	–	125
Totals									21,210					144,799

SUMMARY

Dimension stone: 21,210 thousand cu. ft., at 150 lb. per cu. ft.[a] . . . . . 1,590,000 tons

Crushed stone: 144,799 thousand cu. ft., at 2500 lb. per cu. yd.[b] . . . . . 6,700,000 tons
Rock sold to lime burners (*1890 Census*, p. 633) . . . . . 478,000 tons
Stone for flux *(ibid.)* . . . . . 3,894,000 tons
Lime *(ibid.)*, mult. by 2.00 to estimate limestone used . . . . . 3,700,000 tons
Total crushed and broken stone produced . . . . . 14,800,000 tons

[a]Based on Min. Resources 1924, Part II, p. 285.
[b]Based on Min. Resources 1916, Part II, p. 1075.

KEY:
1 Stone for building purposes
2 Stone for street work
3 Stone for bridge, dam, and railroad work
4 Stone for miscellaneous purposes

SOURCES
Estimated percent dimension stone, calculated from "deflated price" of Table (1), by formula $D = \frac{P-1}{14}$ (see text).
Dimension stone (1,000 cu. ft.), percents applied to quantities given in *1890 Census of Mineral Industries*, pp. 632-33.
Crushed stone (1,000 cu. ft.), Subtraction of dimension stone estimates from total cubic feet of stone reported for each category of stone use *(ibid.)*.

MO-23, WORKSHEET 2. 1890 Census: Granite

Our estimate of the division of granite output between dimension and broken stone is made as follows:

(1) Paving blocks: dimension stone (at 5 blocks per cubic foot (estimated average), equals 20% of total volume of granite; 21% of total value of granite was paving blocks).

(2) Stone for cemetery, monumental, and decorative purposes: dimension stone (3% of total volume, 16% of total value).

(3) Stone for the following purposes, constituting 77% of total volume and 63% of total value, was allocated between the categories of dimension and broken tone by a formula utilizing the average price of the stone used for each purpose from each state, separately:

Building purposes
Street work other than paving blocks
Bridge, dam, and railroad work
Miscellaneous uses

Price was used as a measure of the extent to which the stone was "labor-intensive" (cut or fabricated rather than blasted and broken). We "deflated" the actual prices by dividing the average price by the average wage for granite quarries in the state and further deducting an allowance for the average ratio of profits to value of output. This "equalized" or "standardized" the prices, so that the tendency of prices to be low in low-wage and low-profit states would not cause an underestimate of the proportion of dimension stone.

The algebra of the "deflation" is indicated in the source notes to Tables (1) and (2) pp. 398-99. The deflated prices arrived at by this method are given in the last 5 columns of Table (2).

The "deflated" prices used as criteria by which to judge the proportions of dimension and broken stone in each category in each state are as follows:

For crushed and broken stone, 1.2¢ per cubic foot (or 24¢/ton [1]), based on the following considerations:

(1) The three lowest average prices for particular states in "bridge, dam, and railroad work" were 1.4¢, 1.6¢, and 1.6¢; the lowest prices for "stone used for street work" (other than paving blocks) were 1.8¢, 2.0¢, and 3.4¢. The lowest of these six average prices probably represent very little but broken stone—riprap, crushed stone for paving, and railroad ballast.

(2) This price is somewhat higher than the price for limestone (see above), for which we have rather good evidence. These differences are in line with those we observe in the years for which we have reports on the average prices of dimension and broken stone separately (see Tables MP-27 and MP-28). The difference here is about 50% after allowing for the 29% higher average wage in granite (used for "deflating"—see above and Tables (1) for limestone and granite).

For dimension stone, 15¢ per cubic foot (or $1.80/ton [2]) based on the following considerations:

(1) Paving blocks, a fairly low grade and rough form of dimension stone, had a deflated price of about 10¢ per cubic foot.

(2) The three highest deflated average prices in category 5, "bridge, dam, and railroad work" (which included everything from capstones to railroad track ballast), were 19.4¢, 12.6¢, and 9.4¢ (Table (2)).

(3) The lowest 4 state averages in category 4, "cemetery, monumental, and decorative purposes", were 5.9¢, 6.5¢, 12.3¢, and 16.2¢ (see Table (2)). The lowest of these is for Colorado, which appears to represent an error, as the computed average wage (used for "deflating") is higher than for any category of workmen (including foremen) as reported by the quarry owners to the Census, and is nearly twice as high as for such states as California, Utah, South Dakota, Oregon. The averages for the 3 states other than Colorado probably represent dimension stone with little or no fabrication work.

(4) Comparison of the price trends for dimension and crushed granite indicates a rising trend for dimension stone and a fairly level trend for crushed. Extrapolating these trends gives an 1889 ratio of prices of about 7 to 1, which is the approximate ratio of the two prices we have estimated ($1.80 per ton is 7.5 times 24¢ per ton).

The algebra of the allocation of the cubic-foot quantities given in the Census to arrive at the data in Table (2) below is set forth in the notes on limestone, above. As a check on the results, we ran a correlation between the estimated outputs of dimension stone and the reported man-days of labor, by states. The correlation coefficient, r, was .96, indicating that an estimate of dimension stone output based on labor employed in each state would have given a very similar estimate of volume.

[1] Based on an average weight of about 2700 lb. per cubic yard, as reported in *Min. Resources 1916*, Vol. II, p. 1073-75. Basalt was included with granite in the *1890 Census*. This 24¢ is equal to an "undeflated" price of 60¢ per ton.

[2] Based on an average weight of about 168 lb./cu. ft., as given in *Min. Resources 1917*, Part II, p. 627 (*Min. Resources 1924*, Part II, p. 275 gives about 165 lb.). This is about 12 cu. ft. per ton. The equivalent undeflated price is $4.50 per ton.

Granite Table (1): Employment, Earnings, and Profits; Deflator

State	Average wages ($ per year)	Total no. of man-days (1000)	Av. no. of days per yr.	Av. wages per day ($)	% of profits to val. of prod.	Deflator (K)
	A	B	C	D	E	F
Calif.	449	386	214	2.10	27	.349
Colo.	905	46	218	4.16	32	.164
Conn.	428	386	237	1.81	23	.423
Del.	459	58	231	1.99	9	.456
Ga.	290	308	225	1.29	37	.486
Maine	406	740	198	2.05	18	.400
Md.	326	197	233	1.40	21	.561
Mass.	489	776	233	2.10	21	.375
Minn.	496	112	201	2.46	17	.336
Mo.	566	128	207	2.74	15	.310
N.H.	423	242	193	2.19	18	.375
N.J.	469	144	230	2.04	22	.381
N.Y.	456	86	215	2.12	3	.460
N.C.	259	80	204	1.27	16	.665
Oreg.	553	11	212	2.60	16	.323
Pa.	366	227	188	1.94	17	.427
R.I.	517	286	239	2.16	15	.393
S.C.	231	15	155	1.49	26	.494
S. Dak.	531	83	204	2.60	27	.280
Tex.	320	9	145	2.20	[a]-50	.680
Utah	428	3	170	2.52	10	.358
Vt.	425	183	190	2.24	18	.366
Va.	306	146	204	1.50	23	.513
Wis.	463	123	258	1.80	2	.547
Other	544	13	153	3.56	—	—
Averages (weighted)				2.01	20	.396

[a]Represents loss equal to 50% of value of products.

SOURCES
Col. A, *1890 Census of Mineral Industries*, p. 603, total wages and salaries divided by average number of employees.
Col. B, *Ibid.*, p. 608, average number of each class of labor (foremen, quarrymen, etc.) multiplied by "average number of days" for each.
Col. C, *Ibid.*, Col. B divided by no. of employees.
Col. D, Col. A divided by Col. C.
Col. E, *Ibid.*, p. 612, percentage of profit or loss, on value of products.
Col. F, $K = \frac{1}{\text{Col. D}} \cdot \frac{100 - \text{Col. E}}{100}$ (see text).

Granite Table (2): Calculations: Cubic feet in paving; deflated prices

State	Street work (1000 cu. ft.)		Average price per cu. ft.					Deflated price per cu. ft.				
	2	3	1	3	4	5	6	1	3	4	5	6
Calif.	1,461	1,823	.846	.139	1.339	.270	.333	.295	.049	.467	.094	.116
Colo.	–	1	.112	.209	.359	–	–	.018	.034	.059	–	–
Conn.	152	415	.322	.165	.750	.115	.185	.136	.070	.317	.049	.036
Del.	21	135	.142	.438	–	.111	.119	.065	.200	–	.051	.054
Ga.	320	339	.495	.489	.253	.122	–	.241	.238	.123	.059	–
Maine	3,541	195	.461	.531	1.290	.169	.257	.184	.212	.516	.068	.103
Md.	57	994	.167	.116	.624	.054	–	.094	.065	.350	.030	–
Mass.	1,221	254	.205	.344	.977	.131	.204	.077	.129	.366	.049	.076
Minn.	248	91	.990	.810	.805	.576	–	.333	.272	.270	.194	–
Mo.	871	–	1.987	–	4.167	.225	–	.616	.078	1.292	.070	–
N.H.	409	749	.248	.220	.890	.076	.076	.093	.082	.334	.028	.028
N.J.	800	1,290	.130	.053	.500	.037	–	.050	.020	.190	.014	–
N.Y.	117	130	.139	.185	.142	.070	–	.064	.085	.065	.032	–
N.C.	155	69	.523	.126	.930	.117	.162	.348	.084	.618	.078	.108
Oreg.	117	–	.100	–	1.175	.050	–	.032	–	.380	.016	–
Pa.	767	1,229	.060	.103	.380	.073	.600	.026	.044	.162	.031	.256
R.I.	156	57	.113	.351	5.332	.053	–	.044	.138	2.095	.021	–
S.C.	–	94	.315	.360	.600	.033	–	.156	.178	.296	.016	–
S. Dak.	601	–	.724	–	–	–	–	.203	–	–	–	–
Tex.	–	–	1.066	–	2.214	–	–	.725	–	1.506	–	–
Utah	–	–	.068	–	.650	–	–	.024	–	.233	–	–
Vt.	177	54	.191	.049	1.105	.211	.976	.070	.018	.404	.077	.357
Va.	69	218	.111	.263	1.487	.245	.083	.057	.135	.763	.126	.043
Wis.	1,108	177	.405	.253	6.791	–	–	.222	.138	3.715	–	–
Other	–	–	1.832	–	–	–	–	–	–	–	–	–
Total	12,368	8,314										

KEY:
1 Granite for building purposes
2 Granite paving blocks
3 Street work except paving blocks
4 Cemetery, monumental, decorative purposes
5 Bridge, dam, railroad work
6 Miscellaneous uses

SOURCE: *1890 Census of Mineral Industries*, p. 605.
Deflated price computed from average price by multiplying by factor K, from Table (1).
Cubic feet used for street work calculated by estimating 5 paving blocks per cubic foot, and subtracting this estimate of cubic feet for paving blocks from the total cubic feet reported for street work.

Granite Table (3): Derivation of Dimension Stone Quantities

State	% dimension stone				Dimension stone (1000 cu. ft.)					
	1	3	5	6	1	2	3	4	5	6
Calif.	100	27	59	75	496	1,461	489	86	523	11
Colo.	4	16	–	–	113	–	–	56	–	–
Conn.	90	42	27	17	2,120	152	175	148	153	33
Del.	38	100	28	30	88	21	135	–	282	2
Ga.	100	100	34	–	701	320	339	190	299	–
Maine	100	100	41	66	1,810	3,541	195	232	348	37
Md.	59	38	13	–	938	57	381	31	92	–
Mass.	47	85	27	46	3,129	1,221	215	509	68	328
Minn.	100	100	100	–	211	248	91	5	3	–
Mo.	100	48	42	–	110	871	–	–	119	–
N.H.	59	51	12	12	767	409	380	152	13	11
N.J.	27	6	1	–	89	800	75	–	55	–
N.Y.	38	53	14	–	406	117	69	122	10	–
N.C.	100	52	48	70	64	155	35	25	181	13
Oreg.	14	–	3	–	9	117	–	2	3	–
Pa.	10	23	14	100	240	767	285	15	191	7
R.I.	23	91	6	–	545	156	52	110	13	–
S.C.	100	100	3	–	26	–	94	4	3	–
S. Dak.	100	–	–	–	185	601	–	–	–	–
Tex.	100	–	–	–	20	–	–	1	–	–
Utah	9	–	–	–	11	–	–	1	–	–
Vt.	42	4	47	100	99	177	2	373	93	35
Va.	33	89	83	22	352	69	194	45	232	2
Wis.	100	91	–	–	100	1,108	162	–	–	–
Other	100	–	–	–	41	–	–	–	–	–
Total					12,683	12,368	3,369	2,107	2,680	481

SUMMARY

Total of the above totals is 33,689 thousand cubic feet. At 168 lb. per cu. ft., this is 2,830,000 tons.

Total granite quarried was reported as 62,287 thousand cubic feet.
Subtracting dimension stone, 33,689 thousand cubic feet.
Estimated crushed stone, 28,598 thousand cubic feet.

At 100 lb. per cubic foot, this is estimated as 1,430 thousand tons of crushed and broken granite.

KEY:
1 Granite for building purposes
2 Granite paving blocks
3 Street work except paving blocks
4 Cemetery, monumental, decorative purposes
5 Bridge, dam, railroad work
6 Miscellaneous uses

MO-23, WORKSHEET 3. 1890 Census: Sandstone

The division of the quantities reported in the *1890 Census* between dimension and broken stone is based on clues offered by the granite and limestone prices, as estimated above for 1889 and as observed in the later data in the *Mineral Resources* volumes.

The latter data show nondimension sandstone selling generally at about the level of granite, somewhat above limestone. Dimension sandstone is generally reported at levels below both granite and limestone.

In utilizing the procedures for estimating the division between dimension and nondimension stone (outlined above for limestone), we have therefore used the following "deflated" average prices:

Dimension stone, 10¢ per cubic foot. Since the deflating factor for sandstone averages about .40, the same as granite but well below the .49 for limestone, this price "deflated" is 25¢ per cubic foot, or 33% below that for granite and 16% below that for limestone.

Broken stone, 1.1¢ per cubic foot. This takes into account the fact that sandstone is reported somewhat lighter per cubic foot than granite (*Min. Resources 1916,* Part II, pp. 1078 and 1073-75), as well as the above reported similarity in prices and "deflators." Bluestone, a variety of sandstone quarried in New York, New Jersey, and Pennsylvania, had a reported average value of 3.3¢ per cubic foot in the form of "rubble and bridge stone," sold by perch and cubic yard, which is, as it should be, a little higher than this "undeflated" price of 2.75¢ for crushed sandstone.

In addition to the above, we have added bluestone figures to the sandstone figures, as this is consistent with the later data. Our method of dividing the total bluestone between dimension and nondimension stone was as follows:

Page 660 of the *1890 Census* gives "Rubble and bridge stone, sold by perch and cubic yard" with an average price of 3.3¢ per cubic foot, which we have classified as nondimension stone. The other classifications are "Dimension stone," with an average price of 46¢ per cubic foot, and "Purchases by wholesale dealers" (from casual and piece-workers), at an average price of 48¢ per cubic foot; both of these have been classified as dimension sandstone.

The resultant average prices of dimension and nondimension stone are derived as follows:

Dimension stone:	*1000 cu. ft.*	*$1000*
Sandstone for abrasive purposes	1,379	580
Other dimension sandstone (Table (3), below), at 25¢/cu. ft. (see above)	34,160	8,540
Bluestone—dimension (*1890 Census,* p. 660)	3,485	1,636
	39,024	10,756
Average price per cubic foot		$.275
Equals, at 150 lb./cu. ft.		$3.68/ton
Nondimension stone:		
Nondimension sandstone, at 2.75¢/cu. ft. (see above)	36,032	991
Nondimension bluestone (*1890 Census,* p. 660)	1,642	54
	37,674	1,045
Average price per cubic foot		$.028
Equals, at 2500 lb./cu. yd.		$.60/ton

Sandstone Table (1): Employment and Earnings

State	Av. wages per year ($)	Total no. of man-days (1000)	Av. no. of days per year	Av. wages per day ($)	% profits to val. of prod.	Deflator (K)
	A	B	C	D	E	F
Ala.	327	30.5	240	1.36	-11	.813
Ariz.	195	1.3	103	1.90	59	.215
Ark.	226	8.0	160	1.41	49	.364
Calif.	553	50.5	227	2.43	16	.345
Colo.	520	331	223	2.33	26	.317
Conn.	484	269	247	1.96	23	.394
Idaho	270	1.16	231	1.17	22	.666
Ill.	194	5	110	1.77	40	.341
Ind.	199	43	228	.87	2	1.130
Iowa	399	27.6	194	2.05	12	.432
Kans.	321	72.5	220	1.46	21	.540
Ky.	208	40.9	135	1.54	27	.474
Md.	180	6.9	159	1.13	13	.773
Mass.	457	193	214	2.14	21	.367
Mich.	296	73.6	213	1.39	48	.373
Minn.	361	49.5	242	1.50	22	.521
Mo.	362	37	193	1.88	47	.280
Mont.	404	10.4	151	2.68	1	.371
N.H.	241	158	122	1.98	3	.488
N.J.	440	215	248	1.77	24	.428
N. Mex.	325	34	90	3.61	25	.207
N.Y.	333	263	168	1.98	19	.411
N.C.	141	10.6	201	.70	20	1.142
Ohio	354	820	200	1.77	25	.423
Oreg.	514	2.1	300	1.71	48	.305
Pa.	322	550	188	1.71	27	.429
S. Dak.	467	173	123	3.79	4	.254
Tenn.	64	1.3	41	1.57	4	.609
Tex.	214	6.1	144	1.48	21	.531
Utah	551	12.6	206	2.67	8	.344
Va.	216	5.1	138	1.56	25	.481
Wash.	435	19.4	175	2.49	28	.291
W. Va.	214	50.6	150	1.43	43	.401
Wis.	296	56.8	152	1.94	25	.388
Wyo.	265	9.3	135	1.97	-36	.693
Other	209	8	145	1.44	–	–
All states		3,335	197	1.88	25	.400

SOURCE: *1890 Census of Mineral Industries*, pp. 647-48 and 657.
For methods of calculation see above, Granite Table (1).

$$K = \frac{1}{\text{Col. D}} \cdot \frac{100 - \text{Col. E}}{100} \text{ (see text).}$$

Sandstone Table (2): Prices, Deflation, and Percentage of Dimension Stone

State	Average prices (cents per cubic foot)				Deflated prices (cents per cubic foot)				% dimension stone			
	1	2	3	4	1	2	3	4	1	2	3	4
Ala.	.058	–	.187	–	.047	–	.152	–	40.4	–	100	–
Ariz.	.041	–	.086	–	.009	–	.018	–	–	–	7.9	–
Ark.	.088	.302	–	.105	.032	.110	–	.038	23.6	100	–	30.3
Calif.	.523	2.000	–	.924	.180	.690	–	.319	100	100	–	100
Colo.	.153	.265	–	.250	.049	.084	.079	–	42.7	82.0	76.4	–
Conn.	.354	.056	.090	–	.139	.022	.035	–	100	12.4	27	–
Idaho	.087	–	–	–	.058	–	–	–	52.8	–	–	–
Ill.	.159	.016	.080	–	.054	.005	.027	–	48.3	–	18	–
Ind.	.153	–	.080	–	.173	–	.090	–	100	–	88.8	–
Iowa	.201	.100	.020	–	.087	.043	.009	–	85.4	34.8	–	–
Kans.	.075	.292	.030	–	.041	.158	.016	–	33.7	100	5.6	–
Ky.	.160	.115	.100	–	.076	.055	.047	–	73.0	49.4	40.4	–
Md.	.031	.051	.010	.022	.024	.039	.008	.017	14.6	31.5	–	6.7
Mass.	.448	.081	.050	–	.164	.030	.018	–	100	21.3	7.9	–
Mich.	.359	.220	.100	–	.134	.082	.037	–	100	79.8	29.2	–
Minn.	.075	.736	.004	–	.039	.303	.002	–	31.5	100	–	–
Mo.	.242	.384	.150	–	.068	.108	.042	–	64	100	34.8	–
Mont.	.049	–	–	–	.018	–	–	–	7.9	–	–	–
N.H.	–	–	–	–	–	–	–	–	–	–	–	–
N.J.	.106	–	.077	.100	.045	–	.033	.043	38.7	24.7	36	–
N. Mex.	.334	.300	.050	–	.069	.062	.010	–	65.2	57.3	10.1	–
N.Y.	.123	.160	.050	.036	.051	.066	.021	.015	44.9	61.8	11.2	4.5
N.C.	.240	–	–	–	.274	–	–	–	100	–	–	–
Ohio	.182	.268	.080	.079	.078	.113	.034	.033	75.3	100	25.8	24.7
Oreg.	.168	–	–	–	.051	–	–	–	44.9	–	–	–
Pa.	.079	.205	.100	.088	.034	.088	.043	.038	25.8	86.5	36	30.3
S. Dak.	.258	–	–	–	.066	–	–	–	61.8	–	–	–
Tenn.	.057	–	.010	–	.035	–	.006	–	27	–	–	–
Tex.	.081	–	–	–	.043	–	–	–	36	–	–	–
Utah	.331	–	–	–	.114	–	–	–	100	–	–	–
Va.	.162	–	–	–	.078	–	–	–	75.3	–	–	–
Wash.	.141	–	–	–	.041	–	–	–	33.7	–	–	–
W. Va.	.097	.553	.150	–	.039	.222	.060	–	31.5	100	55.1	–
Wis.	.168	–	.030	–	.065	–	.012	–	60.7	–	1.1	–
Wyo.	.085	–	–	–	.059	–	–	–	53.9	–	–	–
Other	.021	.192	–	–								

(continued on next page)

KEY:
1 Building stone
2 Street work
3 Bridge, dam, and railroad work
4 Miscellaneous

SOURCE: *1890 Census of Mineral Industries*, pp. 649-50.

SANDSTONE (AND BLUESTONE) TABLE (3): Derived Quantities of Dimension Stone and Crushed Stone

(in 1,000 cubic feet)

State	Dimension stone					Crushed stone				
	1	2	3	4	Total	1	2	3	4	Total
Ala.	219	–	67	–	287	323	–	–	–	323
Ariz.	–	–	7	–	7	42	–	79	–	121
Ark.	33	27	–	13	73	107	–	–	30	137
Calif.	330	–	–	2	333	–	–	–	–	–
Colo.	1,965	1,580	32	–	3,577	2,637	347	10	–	2,994
Conn.	2,525	5	69	–	2,599	–	35	187	–	222
Idaho	15	–	–	–	–	15	13	–	–	13
Ill.	40	–	10	–	50	43	3	46	–	92
Ind.	105	–	201	–	[a]309	–	–	–	–	–
Iowa	237	3	–	–	240	158	6	1	–	164
Kans.	76	452	–	–	528	150	–	2	–	152
Ky.	354	7	157	–	519	131	7	232	–	370
Md.	9	13	–	10	32	54	28	255	140	476
Mass.	1,345	107	10	–	1,461	–	394	111	–	506
Mich.	606	2	–	1	[a]654	–	–	3	–	4
Minn.	343	52	–	–	395	746	–	3,015	–	3,761
Mo.	300	6	90	–	397	169	–	169	–	337
Mont.	51	–	–	–	51	594	–	–	–	594
N.H.	–	–	–	–	[a]22	–	–	–	–	–
N.J.	1,760	–	322	36	2,118	2,848	–	981	64	3,892
N. Mex.	356	6	3	–	365	190	4	29	–	223
N.Y.	880	1,770	1	2	2,653	1,080	1,094	9	42	2,225
N.C.	50	–	–	–	50	–	–	–	–	–
Ohio	7,622	1,604	523	244	[b]11,270	2,500	–	1,503	743	4,747
Oreg.	22	–	–	–	22	28	–	–	–	28
Pa.	2,545	739	1,759	548	5,592	7,319	115	3,127	1,262	11,823
S. Dak.	196	–	–	–	[a]220	121	–	–	–	121
Tenn.	12	–	–	–	12	33	–	8	–	42
Tex.	65	–	–	–	65	116	–	–	–	116
Utah	146	–	–	–	146	–	–	–	–	–
Va.	53	–	–	–	53	17	–	–	–	17
Wash.	182	–	–	–	182	358	–	–	–	358
W. Va.	130	42	281	–	453	282	–	229	–	511
Wis.	660	–	1	–	661	427	–	58	–	486
Wyo.	107	–	–	–	107	91	–	–	–	91
Other	–	14	–	–	[a]20	1,059	–	–	–	1,059
Total	23,342	6,429	3,534	856	[c]35,539	21,638	2,035	10,080	2,280	36,032
	Plus: Bluestone (1890 Census, p. 660)				3,485					1,642
					39,024					37,674

@ 150 lb./cu. ft.
= 2,930,000 tons

@ 2,500 lb./cu. ft.
= 1,740,000 tons
Plus dimension stone 2,930,000 tons
Total 4,670,000 tons

[a] Includes minor quantities of sandstone for abrasive purposes.
[b] Includes 1,277 cu. ft. of sandstone for abrasive purposes.
[c] Includes 1,379 cu. ft. of sandstone for abrasive purposes.

KEY:
1 Building stone
2 Street work
3 Bridge, dam, and railroad work
4 Miscellaneous purposes

SOURCE
Percentages from Table (2) applied to quantities given in *1890 Census of Mineral Industries*, pp. 649-50.

MO-23, WORKSHEET 4. 1890 Census: Marble

The marble industry was a relatively minor one, and confined to a few states. In view of the frequent confusion between marble and limestone which is apparent in the early Census, and in view of the considerable problems of separating the dressing (i.e., manufacturing) operations from the quarry work proper, we have used only rough approximations in separating the dimension and broken stone reported together in the Census. The Census totals, and our separation into dimension and broken stone, are summarized in the following table:

Marble Output, 1889 (in 1000 cubic feet, and $1000)

	Total			*Dimension*			*Broken & crushed*		
	Cu. ft.	*Val.*	*$/cu. ft.*	*Cu. ft.*	*Val.*	*$/cu. ft.*	*Cu. ft.*	*Val.*	*$/cu. ft.*
Cal.	34	87	2.58	34	87	2.58			
Ga.	250	196	.78	191	193	1.00	57	3	.05
Md.	333	140	.42	85	128	1.50	248	12	.05
N.Y.	1,172	354	.30	312	312	1.00	860	43	.05
Tenn.	310	419	1.35	310	419	1.35			
Vt.	1,068	2,170	2.03	1,068	2,170	2.03			
Other	154	122	.79	79	118	1.50	75	4	.05
Total	3,320	3,488	1.05	2,079	3,427	1.65	1,240	62	.05
				= 177,000 tons @ 170 lb./cu. ft.			= 62,000 tons @ 2700 lb./cu. yd.		

Source: Total columns: *1890 Census of Mineral Industries*, p. 619.

The bases for our separation are as follows:

California: The price is so high as to indicate that substantially all was dimension stone.

Georgia: Mineral Resources volumes for 1912-16 report Georgia producers selling about one-fourth as much marble by the ton as by the cubic foot. Moreover, the earliest prices available, for 1911-14, run about $1 per cubic foot for dimension marble and about $1 per ton (equals about 20 cubic feet) for broken stone (for all states together). Thus we have, letting D = cubic feet of dimension stone, and B = cubic feet of broken stone:

$$D + B = 250 \text{ (000 cubic feet)}$$
$$1.00 \times D + .05 \times B = 196 \text{ (\$000)}$$

Subtracting,

$$O + .95\,B = 54$$
$$B = 57 \text{ (000 cu. ft. of broken stone)}$$
$$D = 250 - B = 193 \text{ (000 cu. ft. of dimension stone)}$$

Maryland: We do not have price information for Maryland, but the discussion in the Census report (*1890 Census*, p. 626) indicates the marble (and serpentine included under this heading) were of fairly good quality, though little used for monuments. For this reason we assume a price intermediate between those for Georgia (above), with lower wages (cf. *1890 Census*, p. 619), and for Vermont marble, which was of the highest quality and degree of fabrication. We have:

$$D + B = 333$$
$$1.50\,D + .05\,B = 140$$

Mult. by 1.5,
$$1.50\,D + 1.50\,B = 500$$

Subtracting,
$$O + 1.45\,B = 360$$
$$B = 248 \text{ (000 cu. ft. of broken stone)}$$
$$D = 333 - B = 85 \text{ (000 cu. ft. of dimension stone)}$$

New York: Most of the New York marble seems to have been used to produce carbonic gas (*1890 Census*, p. 625); the dimension stone was sold for about half that of the Vermont stone during the period 1911-15, as reported in the *Mineral Resources* volumes for those years. Thus we take a figure half that of Vermont, which we have estimated (below) at $2 per cubic foot.

$$D + B = 1{,}172$$
$$1.00\,D + .05\,B = 354$$

Subtracting,
$$O + .95\,B = 818$$
$$B = 860$$
$$D = 1172 - B = 312$$

Tennessee: The 1911-15 *Mineral Resources* volumes indicate that Tennessee usually sold little or no broken stone—at least, there are only two small entries in these years for cheap stone, sold by the ton. The 1889 price is such as to indicate that the stone was probably all dimension stone.

Vermont not only was the largest producer of dimension marble, but produced the highest quality stone and gave it the greatest degree of fabrication before sale. Stone sold by the ton in these years constituted about 5-10% of volume and less than half of one percent of value. It appears a safe assumption that practically all the 1889 output was dimension stone.

Other: This is a very small residuum. We have merely assumed a price of $1.50 per cubic foot for what dimension stone there was:

$$D + B = 154$$
$$1.50\,D + .05\,B = 122$$

Multip. by
$$1.50\,D + 1.50\,B = 231$$

Subtracting,
$$O + 1.45\,B = 109$$
$$B = 75$$
$$D = 154 - B = 79$$

MO-24. CEMENT: Output

(million barrels)

	Portland cement	Natural plus puzzolan	Preferred series, total cement
	A	B	C
1880	.04	2.0	2.1
1881	.06	2.4	2.5
1882	.08	3.2	3.2
1883	.09	4.2	4.3
1884	.10	4.0	4.1
1885	.1	4.1	4.2
1886	.1	4.2	4.3
1887	.2	6.7	6.9
1888	.2	6.2	6.5
1889	.3	6.5	6.8
1890	.3	7.1	7.4
1891	.4	7.4	7.9
1892	.5	8.2	8.8
1893	.6	7.4	8.0
1894	.8	7.6	8.4
1895	1.0	7.7	8.7
1896	1.5	8.0	9.5
1897	2.7	8.4	11.0
1898	3.7	8.6	12.3
1899	5.6	10.2	15.8
1900	8.5	8.7	17.2
1901	12.7	7.4	20.1
1902	17.2	8.5	25.7
1903	22.3	7.6	29.9
1904	26.5	5.2	31.7
1905	35.2	4.9	40.1
1906	46.5	4.5	51.0
1907	48.8	3.4	52.2
1908	51.1	1.8	52.9
1909	65.0	1.7	66.7
1910	76.5	1.2	77.8
1911	78.5	1.0	79.5
1912	82.4	.9	83.3
1913	92.1	.8	92.9
1914	88.2	.8	89.0
1915	86	[a]1	87
1916	92	1	92
1917	93	1	93
1918	71	*	72
1919	81	1	81
1920	100	[a]1	101
1921	99	[a]1	99
1922	115	[a]1	116
1923	137	[a]1	139
1924	149	[a]1	151
1925	162	2	163
1926	165	2	167
1927	173	2	175
1928	176	2	179
1929	171	2	173
1930	161	2	163
1931	125	1	127
1932	77	*	77
1933	63	1	64
1934	78	1	78
1935	77	1	78
1936	113	2	114
1937	116	2	118
1938	105	2	107
1939	122	2	125
1940	130	3	133
1941	164	3	167
1942	183	3	185
1943	133	2	135
1944	91	1	92
1945	103	1	104
1946	164	2	167
1947	187	3	189
1948	205	3	209
1949	210	3	213
1950	226	4	230
1951	246	3	249
1952	249	3	253
1953	264	3	268
1954	272	3	276
1955	297	1	298
1956	316	1	318
1957	298	1	299

MO-24, SOURCES

Col. A, Portland cement production
- 1880-99. *Min. Resources 1909*, Part II, p. 438.
- 1900-19. *Stat. Abstract 1925*, Table 712.
- 1920-54. *Stat. Abstract 1951*, Table 841; *1954*, Table 908; *1957*, Table 945.
- 1955-57. *Min. Yearbook 1957*, Vol. I, pp. 302.

Col. B, Masonry, natural and puzzolan cement production
- 1880-99. *Min. Resources 1909*, Part II, p. 442 (natural) plus p. 443 (puzzolan).
- 1900-57. See sources for same period for Col. A.

Col. C, Preferred series. Sum of Cols. A and B.

MO-24, NOTES

* Less than 50,000 barrels.

[a] Shipments.

Weight per barrel of the different kinds of cement has varied. The weight per barrel of portland cement ranged from 400 lb. in 1882 to 376 lb. in 1916; of natural cement, from 300 lb. in 1882 to 240 lb. in 1891 and 376 lb. in 1921; weight per barrel of puzzolan cement likewise varied. Since 1921, however, weight of all barrels has been 376 lb.

Prepared masonry cement is excluded from these figures because inclusion would amount to duplication.

The amounts of raw materials used per barrel of portland cement in 1954 and 1929 were as follows (*Min. Yearbook 1955*, Vol. I, p. 286, and *Min. Resources 1929*, Part II, p. 407), in pounds:

	1954	*1929*
Cement rock	111	507
Limestone	422	
Marl	9.5	17.2
Clay and shale	63	59
Slag	9.5	15.6
Gypsum	14.8	14.2
Other	10.7	18.3
Total	641	632

MO-25. LIME: Output

(million tons)

	Lime sold		Total, in equivalent quicklime (Col. A less 24% of Col. B)
	Total	Hydrated	
	A	B	C
1889	2.09		2.09
1902	2.59		2.59
1903			
1904	2.71	(.08)	2.69
1905	2.98	(.10)	2.96
1906	3.20	.12	3.17
1907	3.09	.14	3.06
1908	2.77	.14	2.73
1909	3.48	.20	3.44
1910	3.51	.32	3.43
1911	3.39	.30	3.32
1912	3.53	.42	3.43
1913	3.59	.49	3.48
1914	3.38	.52	3.26
1915	3.62	.58	3.48
1916	4.07	.72	3.90
1917	3.79	.71	3.62
1918	3.21	.62	3.06
1919	3.33	.78	3.14
1920	3.57	.85	3.36
1921	2.53	.79	2.34
1922	3.64	1.11	3.37
1923	4.08	1.23	3.78
1924	4.07	1.32	3.76
1925	4.58	1.56	4.21
1926	4.56	1.61	4.17
1927	4.41	1.60	4.03
1928	4.46	1.61	4.07
1929	4.27	1.55	3.90
1930	3.39	1.33	3.07
1931	2.71	1.12	2.44
1932	1.96	.85	1.75
1933	2.27	.84	2.07
1934	2.40	.83	2.20
1935	2.99	1.01	2.75
1936	3.75	1.23	3.45
1937	4.12	1.30	3.81
1938	3.35	1.17	3.07
1939	4.25	1.32	3.94
1940	4.89	1.39	4.55
1941	6.08	1.59	5.70
1942	6.10	1.29	5.79
1943	6.60	1.31	6.28
1944	6.47	1.32	6.16
1945	5.92	1.35	5.60
1946	5.99	1.65	5.60
1947	6.78	1.76	6.36
1948	7.26	1.82	6.83
1949	6.32	1.69	5.91
1950	7.48	1.88	7.03
1951	8.26	1.92	7.89
1952	8.07	1.88	7.62
1953	8.60	2.04	8.11
1954	7.61	1.98	7.13
1955	9.47	2.24	8.93
1956	9.54	2.19	9.01
1957	9.03	2.08	8.53

MO-25, SOURCES

COL. A

1889. *1890 Census of Mineral Industries,* p. 632. Number of 200-lb. barrels divided by 10, plus "Stone for burning into lime" produced, converted into lime at the ratio of 2 tons rock = 1 ton lime.

1902. *1902 Census of Mineral Industries,* p. 812. Value of lime produced, divided by the estimated average value per ton (see Table MP-30, average value of 1904, extrapolated by the price index to 1902).

1904-52. *Hist. Stat. 1960,* series M-181.

1953-57. 1952 extrapolated by the series in *Min. Yearbook 1957,* Vol. I, p. 744, on lime sold on the open market.

COL. B, *Mineral Resources* and *Minerals Yearbook* for the various years, beginning with *Min. Resources 1907,* Part II, p. 549.

COL. C, Col. A less 24% of Col. B.

MO-25, NOTES

( ) Estimated.

COL. A. 1902: We have omitted stone "sold to lime burners," valued at $237 thousand, because this value is omitted from the *Mineral Resources* data on lime produced (see for example *Min. Resources 1907,* Part II, p. 546), which is the basis of the *Historical Statistics* series used for the other years. If this stone is additional, and its lime is not included in the value of lime produced, it would amount to about 600,000 tons, valued at the same price as stone for flux, and would produce about 300,000 tons of lime.

1953-57: We have departed from the *Historical Statistics* series. This adjustment is made necessary by the large increase in coverage of captive lime production in 1953 and following years. About one-third of the captive tonnage was covered in the earlier years, and we have continued this series. The captive tonnage covered in this way is about 6% of tonnage sold.

COL. C. This percentage is derived as follows: Hydrated lime is $Ca(OH)_2 = CaO + H_2O$. The atomic weights of the elements in quicklime and hydrated lime are 56 and 74, respectively. 56/74 = .76, that is, the weight of quicklime used is about 24% less than that of the hydrated lime produced by addition of water.

MO-26. SAND AND GRAVEL: Output

(million tons)

	Census, output	Estimated from cement consumption	Preferred series, output
	A	B	C
1880		8	
1881		8	
1882		9	
1883		10	
1884		10	
1885		10	
1886		11	
1887		13	
1888		13	
1889		13	
1890		14	
1891		15	
1892		15	
1893		15	
1894		15	
1895		16	
1896		16	
1897		17	
1898		17	
1899		21	
1900		22	
1901		23	
1902		28	
1903		31	
1904		31	
1905		38	[a,b]23.2
1906		48	[a,b]32.9
1907		49	[a,b]41.8
1908		48	[a,b]37.2
1909		59	[a]59.6
1910		67	[a]69.4
1911		67	[a]66.9
1912		69	[a]68.4
1913		78	[a]79.5
1914		75	[a]79.3
1915			[a]76.6
1916			[a]89.1
1917			[a]76.4
1918			[a]61.8
1919			[a]70.6
1920			[a]82.1
1921			[a]79.9
1922			[a]94.9
1923			138
1924			153
1925			165
1926			175
1927			189
1928			200
1929	175		206
1930			177
1931			129
1932			85.2
1933			66.1
1934			75.3
1935			84.6
1936			120
1937			125
1938			106
1939	123		118
1940			131
1941			182
1942			233
1943			176
1944			151
1945			152
1946			192
1947			213
1948			234
1949			231
1950			258
1951			286
1952			302
1953			309
1954	395		397
1955			420
1956			470
1957			466

MO-26, SOURCES

Col. A, *1954 Census of Mineral Industries*, p. 14E-4, shipments of sand and gravel.

Col. B, Estimated from correlation of sand and gravel output with cement consumption (Table MC-33).

Col. C, Preferred series

1905-39. Barger & Schurr, p. 289, Table A-1, 17 (A) plus 17 (B), quantity.

1940-57. *Min. Yearbook 1941*, p. 1272; *1943*, p. 1324; *1945*, p. 1296; *1947*, p. 1035; *1949*, p. 1069; *1951*, p. 1120; *1952*, Vol. I, p. 868; *1954*, Vol. I, p. 980; *1956*, Vol. I, p. 986; *1957*, Vol. I, p. 993; *1958*, Vol. I, p. 908: sand and gravel sold or used by producers in the United States, total commercial sand and gravel, short tons.

MO-26, NOTES

[a] Includes noncommercial output.

[b] The 1905-08 data appear too low, by comparison with cement consumption data (Table MC-33). In Col. B we have estimated output on the basis of cement consumption (see Figs. 1 and 2, opposite).

The *1929 Census* was the first for sand and gravel. It appears probable that there was undercoverage, as the Bureau of Mines (per Barger & Shurr) reported some 18% more output.

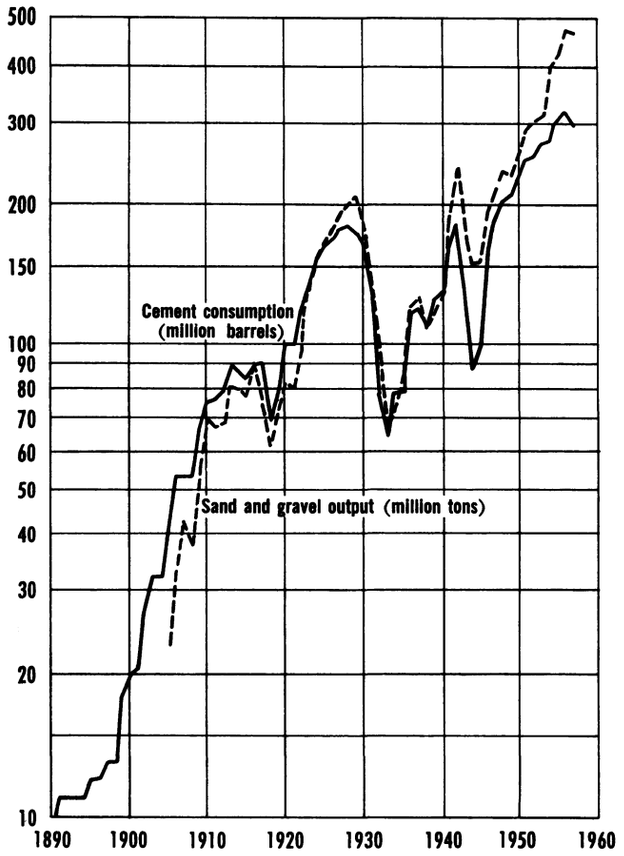


Figure 1. Output of sand and gravel and consumption of cement.

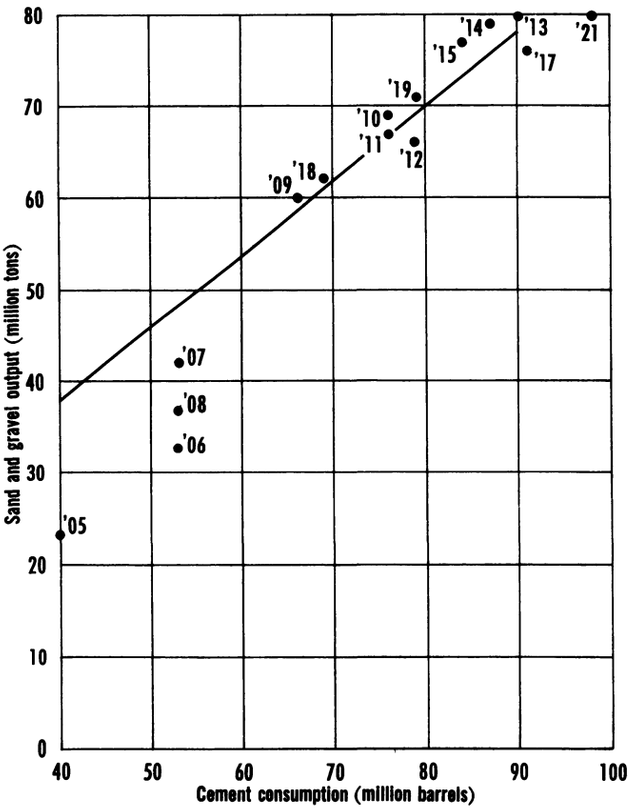


Figure 2. Sand and gravel output vs. cement consumption.

MO-27. CLAYS: Output

	Kaolin and paper clay	Ball clay	Fire and stoneware clay	Fuller's earth	Bentonite	Miscellaneous	Sum	Total clays ($ mil.)		
								1902 prices	1929 prices	1954 prices
	(thousand tons)									
	A	B	C	D	E	F	G	H	I	J
1895				6.9						
1896				9.9						
1897	69	113	381	17.1			580			
1898				14.9						
1899				12.4						
1900				9.7						
1901	97	21	1022	14.1		227	1381	1.9	4.4	5.7
1902	124	50.5	1018	11.5		263	1467	2.2	5.0	6.5
1903	50	92	1285	20.7		215	1663	2.2	5.4	6.8
1904	112	46	1155	29.5		196	1538	2.3	5.2	6.8
1905	121	61	1411	25.2		213	1831	2.7	6.1	7.9
1906	128	54	1527	32.0		318	2059	2.9	6.8	8.7
1907	114	52	1600	32.9		418	2216	3.0	7.1	9.0
1908	93	41	1226	29.7		364	1754	3.1	5.7	7.2
1909	113	49	1595	33.5		403	2194	3.0	7.0	8.8
1910	120	71	1792	32.8		407	2423	3.3	7.8	9.8
1911	127	65	1678	40.7		313	2224	3.2	7.3	9.4
1912	146	65	1820	32.7		500	2564	3.5	8.3	10.5
1913	155	67	1974	38.6		452	2687	3.7	8.7	11.1
1914	151	68	1540	41.0		452	2252	3.3	7.6	9.8
1915	141	75	1705	47.9		442	2411	3.5	8.1	10.3
1916	201	90	2194	67.8		449	3002	4.5	10.2	13.2
1917	206	107	2429	72.6		371	3187	4.8	10.8	14.1
1918	180	90	2392	84.5		315	3062	4.6	10.4	13.4
1919	153	65	1816	106		242	2382	4.0	8.6	11.2
1920	268	69.5	2368	128		331	3164	5.3	11.5	15.2
1921	163	54.0	1283	106		248	1854	3.4	7.2	9.6
1922	276	76.8	1766	139		529	2787	5.1	10.9	14.4
1923	337	97.1	2380	149		621	3583	6.3	13.5	17.9
1924	327	83.0	2503	178		779	3870	6.7	14.5	18.9
1925	367	110	2644	207		909	4237	7.5	16.1	21.2
1926	432	112	2903	234		519	4200	8.0	16.6	22.3
1927	454	120	2798	264		477	4113	8.2	16.9	22.9
1928	496	121	2881	287		529	4314	8.8	17.9	24.3
1929	518	118	3266	316		444	4662	9.4	19.2	26.1
1930	534	93.5	2623	336	83	630	4300	9.2	18.5	25.2
1931	443	83.0	1531	288	52	410	2807	7.0	13.5	18.8
1932	345	47.6	776	253	58	166	1646	4.9	9.3	13.7
1933	411	64.6	1162	224	85	118	2065	5.6	10.5	15.7
1934	426	62.9	1346	220	146	206	2407	6.0	11.5	17.2
1935	524	96.3	1938	228	157	208	3151	7.3	14.2	21.2
1936	639	101	2472	231	178	393	4014	8.6	17.2	25.2
1937	732	121	2786	226	195	404	4463	9.5	19.0	27.9
1938	595	95.0	1459	171	192	390	2902	6.9	13.4	20.5
1939	781	129	2222	167	220	409	3928	8.7	17.3	26.2
1940	833	141	2765	147	251	711	4848	9.7	19.9	29.3
1941	1088	198	4168	207	354	1210	7225	13.7	28.6	41.1
1942	947	162	4839	204	375	1020	7547	13.3	28.3	40.5
1943	929	148	4701	247	480	850	7355	13.3	28.1	41.3
1944	873	156	3900	295	547	850	6620	12.7	26.5	39.8
1945	940	175	3560	296	574	1060	6600	13.0	27.1	40.7
1946	1322	243	4460	299	601	1680	8600	16.8	35.0	51.4
1947	1425	269	4720	329	764	1700	9210	18.1	37.7	56.5
1948	1569	299	5110	342	922	2060	10300	19.9	41.8	62.9
1949	1416	249	4280	321	867	1870	9000	17.7	37.0	56.1
1950	1751	324	4750	396	974	2140	10330	21.2	43.7	66.6
1951	1866	345	5860	484	1219	2240	12010	24.0	49.8	76.5
1952	1829	305	5490	423	1318	2430	11800	23.0	48.3	74.6
1953	1884	301	5160	436	1270	2920	11970	23.5	49.3	74.9
1954	1873	328	4160	376	1278	3460	11470	22.5	47.7	72.0
1955	2166	411	5320	370	1480	4980	14730	27.0	58.7	85.7
1956	2250	459	5710	418	1571	6030	16440	28.0	60.2	92.4
1957	2184	409	5430	366	1451	5210	15050	26.0	55.4	86.2

MO-27, SOURCES

COL. A, Kaolin and paper clay
1901, 1902. *Min. Resources 1902*, p. 752.
1903, 1904. *Min. Resources 1904*, p. 905.
1905-10. *Min. Resources 1910*, Part II, pp. 579-80.
1911-18. *Min. Resources 1920*, Part II, p. 353.
1919-27. *Min. Resources 1928*, Part II, p. 189.
1928-29. *Min. Yearbook 1932-33*, Stat. Appendix, p. 1.
1930-33. *Min. Yearbook 1935*, p. 979.
1934-57. Annual *Min. Yearbook*, clay chapter, table on kaolin sold by producers, etc.

COL. B, Ball clay
1901-33. Same as Col. A, above.
1934-57. Annual *Min. Yearbook*, table on ball clay sold by producers, etc.

COL. C, Fire clay and stoneware clay
1901-33. Same as Col. A, above.
1934-43. Annual *Min. Yearbook*, table on fire clay and stoneware clay sold by producers, etc.[1]
1944-57. Worksheet 2 of this table, Col. E.

COL. D, Fuller's earth
1900-29. Various *Mineral Resources*, chapter on fuller's earth.
1930-57. Various *Minerals Yearbooks*, clay chapter, table on fuller's earth sold by producers, etc.

COL. E, Bentonite
Prior to 1930. Included in Miscellaneous clays.
1930-38. *Min. Yearbook 1940*, p. 1262, table on bentonite sold, etc. (See notes, below.)
1939-57. Various *Minerals Yearbooks*, table on bentonite sold, etc.

COL. F, Miscellaneous clays, including shale and slip clay[2]
1901-29. Same as Col. A, above (includes bentonite).
1930-33. Same as Col. A (and see notes, below).
1934-43. Annual *Min. Yearbook*, table on miscellaneous clay sold by producers, etc.
1944-57. Worksheet 2 of this table, Col. K. (See also the accompanying notes.)

COL. G, Sum of Cols. A through F.

COLS. H-J, Indexes of output, 1902, 1929, and 1954 prices. (For price weights of each kind of clay, see notes, below.)

MO-27, NOTES

[1] Disagreement between *Mineral Facts & Prob.* and *Minerals Yearbooks* on the 1933 fire clay data is apparently due to the inclusion of diaspore and burley clay (see note 1 to table on pp. 980-81, *Min. Yearbook 1935*). The 1935 figures differ unaccountably. We have used *Minerals Yearbook* figures in both cases.

[2] Prior to 1919, "brick clay" (sold as clay) is given as a separate item in the clay table. To be consistent with the later data, this is added to "Miscellaneous clays."

COLS. E and F. The original 1930-36 *Minerals Yearbook* figures for bentonite and miscellaneous clays were revised in 1940 to transfer certain "rotary-drilling muds" from the bentonite category to the miscellaneous category. In Tables A and B, below, we show the original and revised figures and indicate in the last column of each table the transfer. It will be noted that the transfer checks out in each year except 1930, the first year in which bentonite was reported separately from miscellaneous clays. The revised miscellaneous clays figure is higher than the original by 113,902 tons, whereas the bentonite is reduced by only 24,812 tons; 89,090 tons appears to have been added in error to the revised series, and we have deducted this 89,090 from the reported 719,118 to get the 630,000 given for 1930 in Col. F. (113,902 tons is equal to the entire original bentonite figure plus 6,497 tons.)

Table A—Miscellaneous clays (tons)

	Original Minerals Yearbook	*Revised Minerals Yearbook*	*Difference*
1930	605,216	719,118	+ 113,902
1931	383,746	410,268	+ 26,522
1932	151,907	165,777	+ 13,870
1933	85,080	117,515	+ 32,435
1934	137,125	206,277	+ 69,152
1935	174,030	207,718	+ 33,688
1936	278,965	392,783	+ 113,818
1937	403,522	403,522	0

Table B—Bentonite (tons)

	Original Minerals Yearbook	*Revised Minerals Yearbook*	*Difference*
1930	107,405	82,593	— 24,812
1931	78,815	52,293	— 26,522
1932	71,613	57,743	— 13,870
1933	117,428	84,993	— 32,435
1934	215,339	146,187	— 69,152
1935	191,133	157,445	— 33,688
1936	291,625	177,807	—113,818
1937	194,768	194,768	0

In Table C below we show differences for 1930-36 between the revised *Minerals Yearbook* series and the series given for miscellaneous clays in *Mineral Facts & Prob.* It appears that *Mineral Facts & Prob.* has erroneously included the *old* bentonite series in its total, including both the "true" bentonite and the rotary-drilling muds now transferred to miscellaneous clays. (Since *Mineral Facts & Prob.* gives the new bentonite series separately, its inclusion in miscellaneous clays must be double counting.) Thus the differences shown in the last column of Table C are equal to the revised *Minerals Yearbook* bentonite figures (see second column of Table B, above); except:

(1) 1930, where the *Min. Yearbook* figure is in error, as noted above.

(2) 1935, where the 2,094 difference is unexplained.

(3) 1936, where the 113,818 difference is the same as that between the new and old bentonite series (see last column of Table B, above) and indicates that the *Mineral Facts & Prob.* series has erroneously omitted the entire bentonite group, including the rotary-drilling muds which are under the revised *Minerals Yearbook* classification included with miscellaneous clays.

Table C—Miscellaneous Clays

	Revised Yearbook	*Mineral Facts & Prob. Series*	*Difference*
1930	719,118	712,621	—6,497
1931	410,268	462,561	52,293
1932	165,777	223,520	57,743
1933	117,515	202,508	84,993
1934	206,277	352,464	146,187
1935	207,718	363,069	155,351
1936	392,783	278,965	—113,818
1937	403,522	403,522	0

In the following note on "Clays: Changes in Bases of Reporting, 1944-57" (with Worksheets 1 and 2 of this table) we explain a major adjustment made to the *Minerals Yearbooks* figures for these years.

Cols. H, I, and J. The price weights used in computing the indexes of output in 1902, 1929, and 1954 prices are as follows (in dollars per ton):

(continued on next page)

	1902[a] *weights*	*1929*[b] *weights*	*1954*[c] *weights*
Kaolin and paper clay	$5.22	$8.26	$14.96
Ball clay	3.39	8.35	12.71
Fire clay	.99	2.54	3.00
Fuller's earth	8.54	13.64	18.23
Bentonite			11.52
Miscellaneous clays			
1901-29	.91	2.91	2.82
1930-57.			1.66

[a] 1902. *Min. Resources 1902,* p. 752.
[b] 1929. *Min. Resources 1929,* Part II, p. 61, and *1931,* Part II, p. 238.
[c] 1954. *Min. Yearbook 1955,* Vol. I, pp. 336, 338, 339, 341, 343, and 344.

Miscellaneous clays are given a higher average price for the years before 1930, because they included bentonite, a relatively high priced clay. The price for 1901-29 in the column of 1954 weights represents the 1954 average values of bentonite and miscellaneous clays as reported in *Min. Yearbook 1954,* weighted by the 1930 outputs of each. For the 1902- and 1929-weighted computations, we have simply multiplied the average value of miscellaneous clays, as reported in *Mineral Resources* for those years, by the sum of miscellaneous clays and bentonite (Cols. E and F in the table).

For fire clay and miscellaneous clays we have used the average values of clay *sold,* since our output series excludes clay used by the producers (see Worksheets 1 and 2 of this table).

MO-27, WORKSHEETS 1 AND 2. CLAYS: Changes in Bases of Reporting, 1944-57

Clays: Changes in Bases of Reporting, 1944-57. The 1944 *Min. Yearbook* initiated a count which includes clay "not shipped" but consumed at the pit or mine in manufacture (of brick, cement, etc.). Notes are given in the 1944 *Min. Yearbook* which enable us to make an approximate adjustment for consistency with the older series, which covered only clays sold or shipped (for own use at another site). Two categories of clays are affected: fire clay (including stoneware clay) and miscellaneous clays. Three principal kinds of products are affected (these include over 97% of the increase involved in the change: cf. figures designated by footnote 1 in table on pp. 1328-29 of *Min. Yearbook 1944.*) The following table gives our estimates and transcriptions of the 1943 data tabulated by the old and the new methods:

MO-27, WORKSHEET 1. CLAY: 1943 Changes in Fire Clay and Miscellaneous Clays

(1,000 tons)

	Old count (1943 Min. Yrbk.[a]*)*	*New count (1944 Min. Yrbk.)*	*Difference*	*Old/new counts*
Fire clay: Total	4,701	[b]7,798	3,097	
Fire brick & block	2,927	[c]5,100	[c]2,200	.57
Heavy clay products (brick, drain tile, etc.)	250	[c]1,100	[c]850	.23
Misc. clays: Total	850	[b]11,215	10,365	
Cement manufacture	202	[d]3,825	[d]3,623	.053
Heavy clay products (brick, drain tile, etc.)	378	[d]6,941	[d]6,563	.054

[a] Table on pp. 1371-2.
[b] *Min. Yearbook 1944,* table on pp. 1328-29.
[c] Estimated from 1944 data as follows: The difference of 3,097 (above, obtained by subtraction) was distributed between clay used for heavy clay products and clay used for fire brick by assuming that the amount of fire clay used for heavy clay products remained constant from 1943 to 1944. (This was approximately true of structural clay products in general: see *Min. Yearbook 1944,* pp. 1338-39.) The 1944 figure was 1,098,000 tons (*ibid.,* p. 1328), which we round off to the approximation 1,100,000 used above. This gives a difference of 850,000 tons between the old and the new methods of counting fire clay used for heavy clay products. The remainder of the difference of 3,097(000) tons is nearly all in the fire-clay-used-for-fire-brick category: we estimate this as 3,097 — 850 = 2,247(000) tons, which we round off to 2,200. (The remainder of 47 approximately accounts for minor products manufactured at fire clay pits.)
[d] *Min. Yearbook 1944,* p. 1338, fn. 2. We have added the *Min. Yearbook 1943* figure for shipped clay to the figure in footnote 2 for clay used to manufacture cement at the pit, to arrive at the figures in the second column of this worksheet. Some confusion arises, however, from the fact that the preceding footnote (fn. 1) gives 381,360 tons as "purchases of common clay and shale by cement companies" in 1943, instead of the 202,428 given as shipped in *Min. Yearbook 1943,* p. 1371.

The factors in the last column of the table above were used to adjust the post-1943 data to the old levels, providing an estimate of a continuous, consistent series. Worksheet 2 shows the adjustments, which were made separately for each type of clay and for each important product category. The "old" totals for 1944 and following are derived by subtracting the "new" figures for fire brick, heavy clay products, and cement from the "new" totals and adding the estimates for the "old" figures. (The 1930-36 figures are the revised version, as explained in the note to Cols. E and F of Table MO-27, above.)

MO-27, WORKSHEET 2. FIRE CLAY AND MISCELLANEOUS CLAYS

(thousand tons)

	Fire clay, including stoneware clay						Miscellaneous clays					
	Fire brick		Heavy clay products		Total		Cement		Heavy clay products		Total (incl. slip)	
	Old basis	New basis	Old basis	New basis	Old basis	New basis	Old basis	New basis	Old basis	New basis	Old basis	New basis
	A	B	C	D	E	F	G	H	I	J	K	L
1925	803				2644		42				909	
1926	783				2903						519	
1927	921				2798						477	
1928	1100				2881						529	
1929	1254				3266						444	
1930	1017				2623		4				630	
1931	590				1531		82				410	
1932	283				776		35				166	
1933	561				1162						118	
1934	664		42		1346				74		206	
1935	1014		148		1938				93		208	
1936	1399		131		2472		23		169		393	
1937	1645		83		2785		32		141		404	
1938	742		123		1459		31		189		390	
1939	1148		221		2222		33		209		409	
1940	1585		189		2765		63		416		711	
1941	2450		230		4168		298		643		1210	
1942	3106		288		4839		288		527		1020	
1943	2927	[a]5100	250	[a]1100	4701	7798	202	3825	378	6941	850	11215
1944	[a]2100	3692	[a]250	1098	[a]3900	6344	[a]150	2823	[a]320	5881	[a]850	9081
1945	[a]1900	3409	[a]310	1332	[a]3560	6090	[a]170	3145	[a]390	7202	[a]1060	10849
1946	[a]1900	3352	[a]600	2598	[a]4460	7908	[a]250	4773	[a]800	14790	[a]1680	20190
1947	[a]2300	4120	[a]750	3247	[a]4720	9039	[a]280	5345	[a]860	15869	[a]1700	21774
1948	[a]2700	4765	[a]800	3472	[a]5110	9850	[a]340	6362	[a]950	17620	[a]2060	24747
1949	[a]2100	3754	[a]790	3431	[a]4280	8572	[a]350	6618	[a]890	16475	[a]1870	23726
1950	[a]2200	3888	[a]920	4020	[a]4750	9536	[a]370	7010	[a]1010	18629	[a]2140	26400
1951	[a]3200	5635	[a]1060	4616	[a]5860	11853	[a]410	7719	[a]1030	19126	[a]2240	27649
1952	[a]3100	5466	[a]1020	4445	[a]5490	11285	[a]440	8396	[a]950	17588	[a]2430	27023
1953	[a]2200	3818	[a]1040	4534	[a]5160	10267	[a]450	8540	[a]990	18244	[a]2920	28268
1954	[a]1800	3169	[a]980	4247	[a]4160	8797	[a]460	8765	[a]1030	19118	[a]3460	29352
1955	[a]2400	4141	[a]1130	4910	[a]5320	10840	[a]480	9025	[a]1110	20561	[a]4980	32975
1956	[a]2680	4702	[a]1220	5296	[a]5710	11803	[a]490	9260	[a]1120	20710	[a]6030	34385
1957	[a]2400	4214	[a]1060	4618	[a]5430	10805	[a]470	8858	[a]960	17859	[a]5210	30495

[a]Estimated as described in the note above, using the factors in Worksheet 1.

MO-28. GYPSUM: Output

	Output (1000 tons)
	A
1880	90
1881	85
1882	100
1883	90
1884	90
1885	90
1886	95
1887	95
1888	110
1889	268
1890	183
1891	208
1892	256
1893	254
1894	239
1895	265
1896	224
1897	289
1898	292
1899	486
1900	594
1901	634
1902	816
1903	1042
1904	941
1905	1043
1906	1541
1907	1752
1908	1722
1909	2253
1910	2379
1911	2324
1912	2501
1913	2600
1914	2476
1915	2448
1916	2758
1917	2696
1918	2057
1919	2420
1920	3129
1921	2891
1922	3780
1923	4753
1924	5043
1925	5678
1926	5635
1927	5347
1928	5102
1929	5016
1930	3471
1931	2559
1932	1416
1933	1335
1934	1536
1935	1904
1936	2713
1937	3058
1938	2684
1939	3227
1940	3699
1941	4789
1942	4698
1943	3878
1944	3761
1945	3812
1946	5629
1947	6208
1948	7255
1949	6608
1950	8193
1951	8666
1952	8415
1953	8293
1954	8996
1955	10684
1956	10317
1957	9195

MO-28, SOURCES

COL. A

1880-1909. *Min. Resources 1909*, Part II, p. 640.
1910-18. *Min. Resources 1918*, Part II, p. 283.
1919-21. *Min. Resources 1921*, Part II, p. 89.
1922-29. *Min. Resources 1929*, Part II, p. 106.
1930-33. *Min. Yearbook 1934*, p. 850.
1934-37. *Min. Yearbook 1938*, p. 1085.
1938-39. *Min. Yearbook 1940*, p. 1228.
1940-42. *Min. Yearbook 1942*, p. 1284.
1943-45. *Min. Yearbook 1945*, p. 1314.
1946-49. *Min. Yearbook 1949*, p. 588.
1950-54. *Min. Yearbook 1954*, Vol. I, p. 536.
1955-57. *Min. Yearbook 1958*, Vol. I, p. 507.

MO-29. PHOSPHATE ROCK: Output

	Census, net shipments (mil. long tons)	Col. C / Col. A	Preferred series, output (mil. long tons)
	A	B	C
1880	.211	1.00	.211
1881			.267
1882			.332
1883			.378
1884			.432
1885			.673
1886			.431
1887			.481
1888			.452
1889	.550	.99	.546
1890			.510
1891			.588
1892			.682
1893			.941
1894			.997
1895			1.04
1896			.931
1897			1.04
1898			1.31
1899			1.52
1900			1.49
1901			1.48
1902	1.55	.96	1.49
1903			1.58
1904			1.87
1905			1.95
1906			2.08
1907			2.26
1908			2.39
1909			2.34
1910			2.66
1911			3.05
1912			2.97
1913			3.11
1914			2.73
1915			1.84
1916			1.98
1917			2.58
1918			2.49
1919	1.99	1.14	2.27
1920			4.10
1921			2.06
1922			2.42
1923			3.01
1924			2.87
1925			3.48
1926			3.21
1927			3.17
1928			3.50
1929	3.83	.982	3.76
1930			3.93
1931			2.54
1932			1.71
1933			2.49
1934			2.84
1935			3.04
1936			3.35
1937			3.96
1938			3.74
1939	3.96	.949	3.76
1940			4.00
1941			4.69
1942			4.64
1943			5.13
1944			5.38
1945			5.81
1946			6.86
1947			9.03
1948			8.67
1949			8.99
1950			10.25
1951			11.10
1952			11.32
1953			12.52
1954	13.39	.974	13.04
1955			13.19
1956			14.11
1957			14.60

MO-29, SOURCES

COL. A, *1954 Census of Mineral Industries*, p. 14H-6, "Shipments of primary products."

COL. B, Ratio, Col. C/Col. A.

COL. C, Preferred series

1880-1949. *Hist. Stat. 1949*, series G-89, "sold or used by producers" and *Stat. Abstracts* (Bureau of Mines data).

1950-57. *Min. Yearbooks*, phosphate rock chapters, Table 1, sold or used by producers.

MO-30. POTASH: Output

	Producers' sales (1000 tons)
	A
1915	1
1916	10
1917	33
1918	39
1919	46
1920	41
1921	4
1922	11
1923	19
1924	22
1925	26
1926	25
1927	50
1928	60
1929	58
1930	57
1931	64
1932	56
1933	139
1934	114
1935	225
1936	223
1937	267
1938	286
1939	366
1940	393
1941	531
1942	681
1943	732
1944	818
1945	870
1946	928
1947	1053
1948	1143
1949	1121
1950	1276
1951	1408
1952	1598
1953	1732
1954	1918
1955	2006
1956	2103
1957	2137

MO-30, SOURCES

COL. A, *Hist. Stat. 1960,* series M-191, and *Min. Yearbook 1957.* Sales of potassium salts by producers, in short tons of K_2O equivalent.

MO-31. SULFUR: Output

(thousand long tons)

	Native sulfur	Byproduct sulfur	Pyrites	Pyrites, sulfur content	Total sulfur output
	A	B	C	D	E
1880	.54		2.0	.9	1.8
1881	.54		10.0	4.5	6.4
1882	.54		12.0	5.4	7.6
1883	.89		25.0	11	15
1884	.45		35.0	16	20
1885	.64		49.0	22	30
1886	2.23		55.0	25	35
1887	2.68		52.0	23	34
1888	0		54.3	24	31
1889	.40		93.7	42	54
1890	0		99.9	45	58
1891	1.07		106	48	63
1892	2.40		110	50	67
1893	1.07		75.9	34	45
1894	.45		106	48	62
1895	1.61		99.5	45	61
1896	4.70		116	52	74
1897	2.03		143	64	85
1898	1.07		193	87	114
1899	4.31		175	79	107
1900	3.15		205	92	122
1901	6.87		235	106	145
1902	7.44		200	90	125
1903	7.38		226	102	140
1904	85.0		207	93	232
1905	220		253	114	425
1906	295		261	117	530
1907	189		247	111	390
1908	364		223	100	590
1909	274		247	111	490
1910	247		242	109	460
1911	205	100	302	140	440
1912	788	140	351	160	1090
1913	491	140	341	150	780
1914	418	170	337	150	740
1915	521	200	394	180	900
1916	650	260	439	200	1110
1917	1134	330	483	220	1680
1918	1354	(255)	464	210	1820
1919	1191	180	421	170	1540
1920	1255	280	311	120	1660
1921	1880	140	157	70	2090
1922	1831	(160)	173	80	2070
1923	2036	180	191	80	2300
1924	1221	200	168	70	1490
1925	1409	230	194	80	1720
1926	1890	240	227	70	2220
1927	2112	240	303	120	2470
1928	1982	270	313	113	2365
1929	2362	290	334	121	2773
1930	2559	272	348	124	2955
1931	2129	198	331	121	2448
1932	890	138	190	66	1094
1933	1406	142	284	108	1656
1934	1422	132	432	168	1722
1935	1633	139	514	203	1975
1936	2016	167	547	217	2400
1937	2742	191	584	232	3165
1938	2393	160	556	219	2772
1939	2091	194	519	220	2505
1940	2732	211	627	262	3205
1941	3139	234	645	270	3643
1942	3461	242	720	307	4010
1943	2540	302	802	337	3179
1944	3219	304	789	333	3856
1945	3754	290	723	296	4340
1946	3862	262	813	337	4461
1947	4443	276	941	392	5111
1948	4870	257	929	388	5515
1949	4747	262	888	378	5387
1950	5193	400	931	393	5986
1951	5280	485	1018	433	6198
1952	5295	572	994	418	6285
1953	5194	675	923	380	6249
1954	5579	691	909	405	6675
1955	5800	818	1007	410	7028
1956	6484	902	1070	432	7818
1957	5579	990	1067	436	7005

MO-31, SOURCES

COL. A, Native sulfur

1880-1942. *Hist. Stat. 1949*, series G-83, "Production."

1943-48. *Minerals Yearbooks*, sulfur and pyrites chapter, first table, "production," plus figures given for unrefined sulfur ore used in agriculture, in note to second table in *Min. Yearbook 1946* and *1948*, times 30%[1] to obtain sulfur content.

1949-57. *Min. Yearbooks, 1953, 1957*, sulfur and pyrites chapter, Table 2.

COL. B, Byproduct sulfur, surfur content. Sum of Cols. A through C of Worksheet 1 of this table, rounded to indicate approximation.

COL. C, Pyrites

1880-1948. *Hist. Stat. 1949*, series G-85.

1949-57. *Min. Yearbooks, 1953, 1957*, sulfur and pyrites chapters, Table 2.

COL. D, Pyrites, sulfur content

1880-1918. Col. C times 45% (mentioned as average sulfur content in several sources covering the period).

1919-22. Col. C times percentages given in respective annual *Mineral Resources*, Part II.

1923-27. Col. C times percentage estimated by interpolating between 36% in 1928 and 47% in 1922 (as given in *Min. Resources 1929*, Part II, pp. 189 and 188, and *1922*, Part II, p. 180).

1928-48. Col. C multiplied by percentage of sulfur content in pyrites, as given annually in *Mineral Resources* and *Minerals Yearbook*.

1949-57. *Minerals Yearbooks, 1953 1957*, sulfur and pyrites chapter, Table 2.

COL. E, All sulfur

1880-1910. The ratio of Cols. A plus D to Col. E at 1911 (1.2898) applied to Cols. A plus D.

1911-57. The sum of Cols. A, B, and D.

MO-31, NOTES

( ) Interpolation.

[1] 30% obtained by calculating percentage of sulfur in sulfur ore in data given in 1953 and 1957 *Min. Yearbooks*, Table 2.

Since the invention of the Frasch Process (which became commercially important about 1903) the great bulk of sulfur (about 70% of sulfur output in all forms) has been mined in this manner.

MO-31, WORKSHEET 1. BYPRODUCT SULFUR: Output

(thousand long tons)

	Gas and coal	Cu, Zn mining	Hydrogen sulfide	Total
	A	B	C	D
1911		99		
1912		139		
1913		143		
1914		173		
1915		205		
1916		264		
1917		330		
1918		n.a.		
1919		184		
1920		279		
1921		140		
1922		n.a.		
1923		178		
1924		198		
1925		228		
1926		236		
1927	(2.5)	236		242
1928	(2.5)	264		266
1929	(2.5)	286		288
1930	(2.5)	269		272
1931	2.5	196		198
1932	2.5	136		138
1933	2.5	149		142
1934	1.5	131		132
1935	(1.5)	137		139
1936	(1.5)	166		167
1937	(1.5)	189		191
1938	4	156		160
1939	4	177	13	194
1940	4	191	16	211
1941	5	208	21	234
1942	5	218	19	242
1943	5	279	18	302
1944	19	263	22	304
1945	25	246	19	290
1946	35	209	18	262
1947	43	212	21	276
1948	44	187	26	257
1949	57	167	38	262
1950	142	216	42	400
1951	184	241	60	485
1952	252	253	67	572
1953	342	253	80	675
1954	359	259	73	691
1955	399	325	94	818
1956	465	348	89	902
1957	511	391	88	989

MO-31, Worksheet 1, SOURCES

Col. A, Recovered elemental sulfur (from industrial gases)[1]
- 1927-48. *Min. Yearbooks*, sulfur and pyrites chapter, text under "Recovery as Byproduct."
- 1949-57. *Ibid.*, Table 2, recovered elemental sulfur.

Col. B, Sulfur content of sulfuric acid produced as a byproduct of copper and zinc smelters [2]
- 1911-13. *Min. Resources 1913*, Part II, p. 47, sulfuric acid produced by smelters, 60° Baumé concentration times 25.4% to estimate sulfur content.
- 1914-20. *Min. Resources* for subsequent years, same calculation.
- 1921-26. *Stat. Abstract 1916*, p. 224, *1921*, p. 213, *1925*, p. 710, and *1929*, p. 746.
- 1927-43. *Min. Yearbooks*, sulfur and pyrites chapter, table on byproduct sulfuric acid (expressed as 60°B.), in short tons, times 0.2268.[3]
- 1944-47. *Min. Yearbook 1947*, p. 1126, table on byproduct sulfuric acid (basis, 100%) produced, in short tons, times 0.2920.[4]
- 1948. *Min. Yearbook 1948*, sulfur and pyrites chapter, text under "Recovery as Byproduct."
- 1949-57. *Min. Yearbooks*, sulfur and pyrites chapter, Table 2, line on Byproduct sulfuric acid (sulfur content).

Col. C, Sulfur content of other byproduct sulfur compounds [5]
- 1939-48. *Min. Yearbooks*, sulfur and pyrites chapter, text under "Recovery as Byproduct." Sulfur content of hydrogen sulfide, recovered from oil refinery stills and natural gas.
- 1949-57. *Ibid.*, Table 2, line: Other byproduct sulfur compounds (sulfur content).

Col. D, Sum of Cols. A through C.

MO-31, Worksheet 1, NOTES

( ) Estimated on basis of text in *Min. Yearbooks.*

[1] Elemental sulfur is recovered as a byproduct of the purification of manufactured fuel gases. This sulfur is marketed as a paste containing 38-50% sulfur, or is sold as brimstone (pure sulfur).

[2] Zinc and copper smelter gases were the source of large sulfuric acid production. Prior to 1931 small amounts of acid produced from pyrites in Wisconsin and Tennessee are included. Until the last ten years smelter acid was the most important source of byproduct sulfur.

[3] 0.2268 is the product of 0.2920 (see footnote 4) times .7767 (factor to convert from 60° Baumé acid to 100% basis acid).

[4] 0.2920 is the product of two conversion factors which are needed to obtain an estimate of sulfur content consistent with later data. The first factor is 0.327 (to obtain sulfur content in 100% acid); the second factor is 0.89285 (to convert from short tons to long tons).

[5] These compounds are hydrogen sulfide and liquid sulfur dioxide, which are obtained from industrial gases. The hydrogen sulfide is recovered at oil refineries; the sulfur dioxide, from smelter gases. Industrial recovery of these compounds is a modern development, having been introduced in the late 1930's.

Unlike the Frasch Process crude sulfur, for which consistent data are readily available, the sulfur compounds output data are very poor, partly for the reason that they have frequently had no commercial value because markets were too distant from smelters and refineries.

MO-32. FLUORSPAR: Output

(thousand tons)

	Burns, production	Bu. of Mines, shipments	WPA-NRP, production	Census, net shipments	Preferred series, production
	A	B	C	D	E
1880	4.0				4.0
1881	4.0				4.0
1882	4.0				4.0
1883	4.0				4.0
1884	4.0				4.0
1885	5.0				5.0
1886	5.0				5.0
1887	5.0				5.0
1888	6.0				6.0
1889	9.5			10	9.5
1890	8.2				8.2
1891	10.0				10.0
1892	12.2				12.2
1893	12.4				12.4
1894	7.5				7.5
1895	4.0				4.0
1896	6.5				6.5
1897	5.1				5.1
1898	7.7				7.7
1899	15.9				15.9
1900	18.4				18.4
1901	19.6				19.6
1902	48.0			49	48.0
1903	42.5				42.5
1904	36.5				36.5
1905	57.4				57.4
1906		40.8			40.8
1907		49.5			49.5
1908		38.8			38.8
1909		50.7			50.7
1910		69.4			69.4
1911		87.0			87.0
1912		117			117
1913		116			116
1914		95.1			95.1
1915		137			137
1916		156			156
1917		219			219
1918		264			264
1919		138	153		138
1920		187	201		187
1921		35.0	59.9		35.0
1922		142	133		142
1923		121	149		121
1924		125	147		125
1925		114	108		114
1926		129	140		129
1927		113	119		113
1928		140	132		140
1929		146	157	156	146
1930		95.8	132		95.8
1931		53.5	57.3		53.5
1932		25.2	21.0		25.2
1933		72.9	58.6		72.9
1934		85.8	90.3		85.8
1935		123.7	108		123.7
1936		176.9	168		176.9
1937		181.2	183		181.2
1938		80.4	99.0		80.4
1939		182.8		202	182.8
1940		234			234
1941		321			321
1942		360			360
1943		406			406
1944		414			414
1945		324			324
1946		278			278
1947		329			329
1948		332			332
1949		237			237
1950		302			302
1951		347			347
1952		331			331
1953		318			318
1954		246		265	246
1955		280			280
1956		330			330
1957		329			329

MO-32, SOURCES

Col. A, Arthur F. Burns, *Production Trends in the United States Since 1870* (National Bureau of Economic Research, New York, 1934), Table 44 (original source, *Min. Resources 1925*, Part II, pp. 13-14, and *1929*, Part II, p. 5), "production."

Col. B

1906-29. *Ibid.*, "shipments."

1930-57. *Min. Yearbooks*, "shipments."

Col. C, WPA-NRP Report S-2, Table A-31, merchantable production (includes mines producing an average of 89% of the total output for the 8-year period 1926-33). (Source, *Min. Resources* and *Min. Yearbooks*.)

Col. D, *Min. Yearbook 1935*, p. 1090, "Merchantable fluorspar recovered."

Col. E, *1594 Census of Mineral Industries*, p. 14H5, "primary products."

Col. F, Preferred series

1880-1905. Col. A, transcribed.

1906-57. Col. B, transcribed.

MO-32, NOTES

There is no clearly consistent series for fluorspar production. "Shipments" covers anything from 30% CaF_2 to 98%; "merchantable ore" means anything from 75-80% CaF_2 materials sold to steel mills, to the "acid grade" (97+ %) sold to acid and ceramic works (conversation with R. McDonough, Bureau of Mines fluorspar expert, 10/24/57).

The difference between "production" (Cols. A, C, and D) and "shipments" (Col. B) is presumably accounted for by (a) accumulation and decumulation of inventory by producers, (b) differences in grades (some concentration occurs between the times of measuring "production" and "shipments").

MO-33. SALT: Output

	Salt sold or used by producers (1000 tons)
	A
1880	835
1881	868
1882	898
1883	867
1884	912
1885	985
1886	1079
1887	1121
1888	1128
1889	1121
1890	1243
1891	1398
1892	1638
1893	1666
1894	1816
1895	1914
1896	1939
1897	2236
1898	2466
1899	2759
1900	2922
1901	2879
1902	3339
1903	2656
1904	3084
1905	3635
1906	3944
1907	4159
1908	4035
1909	4215
1910	4243
1911	4366
1912	4665
1913	4816
1914	4873
1915	5350
1916	6360
1917	6980
1918	7240
1919	6880
1920	6840
1921	4980
1922	6790
1923	7130
1924	6800
1925	7400
1926	7370
1927	7570
1928	8070
1929	8540
1930	8050
1931	7360
1932	6410
1933	7600
1934	7610
1935	7930
1936	8830
1937	9240
1938	8030
1939	9280
1940	10360
1941	12720
1942	13690
1943	15210
1944	15720
1945	15390
1946	15130
1947	16050
1948	16400
1949	15570
1950	16630
1951	20210
1952	19550
1953	20790
1954	20670
1955	22690
1956	24210
1957	23840

MO-33, SOURCES

COL. A, Salt sold or used by producers (in all forms, including brine). *Mineral Resources,* various volumes beginning with *Min. Resources 1914,* Part II, p. 293, and *Minerals Yearbooks,* salt chapter (rounded to nearest 10,000 tons after 1914).

Minerals:
Consumption and Foreign Trade (MC)

MC-1. MINERALS: Net Imports

	Fuels	Metals	Metals except gold and silver	Nonmetals	All minerals ($ mil.)			All minerals except gold and silver ($ mil.)		
	($ million, 1954 weights)				1902 weights	1929 weights	1954 weights	1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I	J
1870	-8.4	-26.4	16.7		-14.8	-7.5	-19.8	10.9	18.2	23.3
1871	-9.6	-91.5	20.7		-55.2	-47.0	-86.1	11.6	19.8	26.1
1872	-10.3	-63.0	22.5		-37.7	-29.5	-57.3	13.3	21.5	28.2
1873	-18.4	-56.8	22.2		-36.1	-29.7	-59.2	11.2	17.6	19.8
1874	-18.5	-23.6	16.7		-13.2	-8.2	-25.1	11.1	16.1	15.2
1875	-17.8	-90.1	12.4		-50.9	-46.8	-90.9	10.1	14.2	11.6
1876	-19.9	-44.7	7.4		-21.8	-19.6	-46.6	9.4	11.6	5.5
1877	-27.3	-2.6	7.6		.4	1.3	-11.9	7.4	8.3	-1.7
1878	-25.2	10.7	9.8		10.0	12.0	4.5	9.6	11.6	3.6
1879	-30.3	7.7	10.4		6.6	7.9	-3.6	8.3	9.6	-.9
1880	-25.0	160	30.5	(20)	93.2	99.7	155	16.7	23.2	25.5
1881	-35.9	180	19.8		105	107	164	10.5	12.1	3.9
1882	-36.2	18.5	22.0		8.8	10.8	2.3	11.1	13.1	5.8
1883	-39.4	21.9	19.0		10.7	11.4	2.5	9.2	9.9	-.4
1884	-41.6	-31.0	8.8		-18.5	-20.8	-52.6	5.3	3.0	-12.8
1885	-42.7	22.1	5.1		13.6	10.3	.4	4.0	.7	-16.6
1886	-43.7	-24.8	22.7		-19.9	-19.5	2.1	8.5	8.9	0
1887	-46.9	72.9	24.5		36.8	36.4	47.0	8.5	8.1	-1.4
1888	-44.9	44.1	12.2		24.0	21.1	20.2	5.5	2.6	-11.7
1889	-52.2	-83.9	16.5		-55.4	-58.3	-115	4.5	1.6	-14.7
1890	-54.4	13.7	32.1	(22)	-2.0	-2.9	-18.7	9.2	8.3	-.3
1891	-54.3	-102	17.3	(19)	-69.4	-74.6	-137	1.1	-4.1	-18.0
1892	-58.6	13.5	26.8	(18)	-6.6	-7.5	-27.1	1.7	.8	-13.8
1893	-66.1	-148	18.7	(13)	-105	-115	-201	-6.0	-15.9	-34.4
1894	-78.1	-72.2	-15.2	(13)	-53.4	-75.4	-137	-18.1	-40.1	-80.3
1895	-76.8	-52.8	33.0	(14)	-57.0	-60.7	-116	-5.2	-8.9	-29.8
1896	-75.7	-190	-16.5	(20)	-119	-143	-246	-15.3	-39.4	-72.2
1897	-83.1	16.8	15.0	(25)	2.0	-15.5	-41.3	-15.2	-32.7	-43.1
1898	-85.2	135	8.4	(25)	71.6	60.3	-74.8	-11.7	-23.0	-51.8
1899	-90.2	71.2	20.2	(19)	23.1	45.6	0	-5.8	16.7	-51.0
1900	-99.6	-33.5	2.2	(29.3)	-33.0	-21.6	-104	-11.0	.4	-68.1
1901	-109	42.0	59.9	(50.0)	4.7	42.9	-17.0	16.6	54.8	.9
1902	-94.6	5.4	34.1	(52.1)	-8.8	24.2	-37.1	9.4	42.4	-8.4
1903	-88.7	14.5	49.6	(52.1)	-3.1	29.1	-22.1	18.7	50.9	13.0
1904	-112	-24.0	-21.8	(48.7)	-12.9	-14.1	-87.3	-10.6	-11.8	-85.1
1905	-131	-85.3	10.4	(59.0)	-58.1	-65.9	-157	-.6	-8.4	-61.6
1906	-134	110	39.2	(68.6)	54.1	53.7	44.6	13.4	13.0	-26.2
1907	-151	104	15.2	(48.9)	42.1	30.9	1.9	-9.9	-21.1	-86.9
1908	-172	68.1	-38.8	(24.0)	15.1	-18.2	-79.9	-47.7	-81.0	-187
1909	-174	-90.9	8.6	(61.1)	-70.0	-91.1	-204	-10.6	-31.7	-104
1910	-175	-120	22.9	(64.7)	-90.6	-108	-230	-5.5	-22.4	-87.4
1911	-202	27.8	-29.1	(69.8)	9.6	-16.5	-104	-23.1	-49.2	-161
1912	-210	-16.1	22.6	(62.6)	-40.0	-63.7	-163	-16.3	-40.0	-125
1913	-206	-80.2	-23.4	(68.0)	-60.9	-94.8	-218	-26.0	-59.9	-161
1914	-216	-180	-66.2	(35.7)	-127	-166	-360	-58.6	-97.3	-246
1915	-220	6	0	(44.1)	-36	-74	-170	-39	-77	-176
1916	-247	905	55	(56.9)	473	441	715	-26.4	-60	-135
1917	-245	280	5	(40.7)	106	60	76	-56	-101	-199
1918	-217	42	162	(27.0)	-92	-100	-148	-15	-23	-28
1919	-155	-496	111	(77.8)	-340	-312	-573	22	50.1	34
1920	-134	282	142	(51.4)	62	230	199	-19	148	59
1921	19.9	1173	28	(24.2)	613	721	1217	-65	44	72
1922	117	517	104	(58.9)	238	424	693	-7.4	180	280
1923	-136	648	148	(73.6)	339	365	586	43	69	86
1924	-171	466	75	68.9	237	240	364	7.7	10	-27
1925	-199	-197	72	69.2	-164	-153	-327	-3.4	8.0	-58
1926	-324	298	162	(84.1)	74	83	58	-4.2	4.9	-78
1927	-300	89	109	(63.5)	-40	-52	-148	-27	-39	-128
1928	-272	-559	132	(74.8)	-414	-416	-756	-5.1	-6.3	-65
1929	-251	521	256	(74.9)	188	220	345	33	64	80
1930	-227	670	221	(54.8)	287	316	498	23	52	49
1931	-169	425	172	(29.8)	164	192	286	15	43	33
1932	-125	-623	115	(20.4)	-427	-408	-728	7.2	27	10
1933	-215	-68	125	(18.3)	-130	-121	-265	-20	-10	-72
1934	-233	1374	88	(22.1)	725	737	1163	-39	-27	-123
1935	-263	2312	131	(44.9)	1279	1319	2094	-23	16	-87
1936	-264	1613	176	(57.0)	846	900	1406	-13	41	-31
1937	-393	1990	254	(75.9)	991	1075	1673	-39	44	-63
1938	-447	2470	59	(41.3)	1331	1342	2064	-107	-96	-347
1939	-431	3878	152	(67.8)	2137	2260	3515	-68	54	-211
1940	-224	5246	369	(60.1)	2932	3133	5082	48	249	205
1941	-153	1847	765	(59.0)	816	1242	1753	174	600	671
1942	-362	1083	681	97.3	339	892	818	99	651	416
1943	-387	620	556	138	119	672	371	82	634	307
1944	-470	-366	674	148	-517	89	-688	104	710	352
1945	-347	507	717	149	40	600	309	168	728	519
1946	-281	812	478	153	326	586	684	128	388	350
1947	-397	2362	452	132	1206	1415	2097	76	285	187
1948	-115	2318	571	160	1224	1772	2363	190	738	616
1949	156	1338	592	99.5	683	1104	1593	240	662	847
1950	406	541	794	157	238	952	1104	383	1097	1357
1951	122	137	597	172	6.7	675	431	276	943	891
1952	274	1526	780	180	792	1584	1980	349	1141	1234
1953	467	1055	967	178	506	1346	1700	451	1291	1612
1954	542	911	821	187	492	1341	1640	436	1285	1550
1955	633	1042	883	227	599	1526	1902	503	1430	1743
1956	669	1156	935	238	671	1663	2063	536	1529	1842
1957	641	1152	910	219	657	1481	2012	510	1334	1770

MC-1, SOURCES

Computation of Index in 1954 Prices:

COL. A, Fuels. Table MC-3, Col. F, transcribed.

COL. B, Metals. Table MC-12, Col. P, transcribed.

COL. C, Metals, except gold and silver. Table MC-12, Col. S, transcribed.

COL. D, Nonmetals. Table MC-31, Col. K, transcribed.

COLS. E, F, and G, All minerals. Computed exactly as Cols. H, I, and J, except that the "All metals" columns of source Table MC-12 were used instead of the "All metals except gold and silver" columns.

COLS. H and I, Preferred series, all minerals except gold and silver, 1902 and 1929 price weights. Computed exactly as Col. J, except that 1902- and 1929-weighted columns in the source tables were used.

COL. J, Preferred series, all minerals except gold and silver, 1954 price weights. Sum, Cols. A, C, and D (linked for missing series in earlier years).

MC-1, NOTES

( ) Estimate. (Good data on diamonds lacking.)

MC-2. MINERALS: Consumption

	Fuels	Metals, incl. gold and silver	Nonmetals	All minerals ($ mil.)		
				1902 prices	1929 prices	1954 prices
	($ million, 1954 prices)					
	A	B	C	D	E	F
1870	269	57	(60)	96	208	386
1871	274	65		100	213	402
1872	341	83		126	266	503
1873	370	90		137	286	547
1874	357	86		133	277	528
1875	351	76		129	265	509
1876	344	71		123	256	496
1877	383	80		139	288	554
1878	367	90		138	275	547
1879	465	98		170	347	675
1880	521	138	(133)	205	396	792
1881	547	137		213	417	830
1882	613	163		248	475	951
1883	648	174		263	511	1017
1884	667	165		269	516	1039
1885	677	157		271	525	1051
1886	720	192		304	579	1160
1887	815	215		348	655	1323
1888	924	223		394	738	1487
1889	891	240	349	388	729	1480
1890	995	273		435	807	1643
1891	1076	270		454	851	1730
1892	1116	301		471	888	1805
1893	1122	250		450	853	1733
1894	1054	226		415	800	1603
1895	1189	327		489	937	1880
1896	1190	287		474	906	1815
1897	1213	318		488	924	1865
1898	1293	377		533	998	2016
1899	1480	452		617	1152	2309
1900	1547	460		634	1175	2376
1901	1706	498		690	1296	2585
1902	1706	621	377	738	1308	2704
1903	2132	602		854	1573	3163
1904	2130	559		840	1530	3098
1905	2363	705		961	1718	3519
1906	2410	795	458	1012	1760	3663
1907	2864	760	443	1104	1943	4067
1908	2578	582	406	966	1729	3566
1909	2789	828	497	1135	1972	4115
1910	3060	883	529	1238	2144	4472
1911	3066	777	535	1215	2117	4378
1912	3217	943	539	1304	2244	4699
1913	3468	970	570	1388	2387	5008
1914	3246	766	516	1241	2171	4528
1915	3410	1009	504	1356	2353	4923
1916	3715	1284	587	1555	2658	5586
1917	4106	1265	524	1627	2794	5895
1918	4291	1366	426	1673	2865	6083
1919	3808	998	480	1490	2535	5286
1920	4420	1188	544	1723	3006	6152
1921	4004	642	427	1405	2421	5073
1922	4208	957	565	1632	2739	5730
1923	5212	1284	711	2044	3425	7207
1924	4909	1162	728	1942	3251	6799
1925	4939	1292	796	2021	3353	7027
1926	5195	1398	827	2133	3551	7420
1927	5347	1291	852	2158	3585	7490
1928	5363	1366	876	2208	3651	7605
1929	5795	1515	911	2401	3944	8221
1930	5180	1131	788	2072	3426	7099
1931	4604	752	578	1725	2866	5934
1932	4073	413	408	1414	2359	4894
1933	4362	581	393	1546	2568	5336
1934	4548	559	443	1596	2688	5550
1935	4794	744	480	1751	2935	6018
1936	5361	1084	656	2091	3463	7101
1937	5849	1240	710	2314	3830	7799
1938	5117	746	595	1925	3185	6458
1939	5523	1169	726	2220	3739	7418
1940	6259	1650	758	2577	4320	8667
1941	6814	2268	918	2997	5110	10000
1942	6858	2337	1024	3102	5405	10219
1943	7459	2266	957	3264	5655	10682
1944	7887	2258	912	3379	5876	11057
1945	7931	2101	928	3375	5749	10960
1946	7897	1890	1078	3382	5518	10865
1947	8468	1965	1183	3583	5828	11616
1948	9031	1990	1292	3814	6449	12313
1949	8300	1800	1207	3552	5823	11307
1950	9037	2313	1409	4039	6768	12759
1951	9826	2179	1535	4302	7220	13540
1952	9853	2171	1574	4357	7354	13598
1953	10167	2432	1626	4564	7636	14225
1954	9857	2037	1764	4441	7452	13658
1955	10827	2363	1959	4910	8213	15149
1956	11431	2393	2075	5159	8651	15899
1957	11375	2344	2079	5141	8469	15798

MC-2, SOURCES

Col. A, Fuel. Table MC-4, Col. G, transcribed.

Col. B, Metals, including gold and silver. Table MC-13, Col. Q, transcribed.

Col. C, Nonmetals. Table MC-32, Col. O, transcribed.

Cols. D and E, Consumption indicators, all minerals, 1902 and 1929 prices. Computed exactly as Col. F, except that 1902 and 1929 prices were used as weights in the computation.

Col. F, Consumption indicator, all minerals, 1954 weights. Sum, Cols. A through C, linked for missing series.

MC-3. MINERAL FUELS: Net Imports

	Petroleum	Bituminous coal	Anthracite	All mineral fuels ($ mil.)		
	($ million, 1954 prices)			1902 prices	1929 prices	1954 prices
	A	B	C	D	E	F
1870	-8.9	1.36	-0.85	-2.5	-4.1	-8.4
1871	-10.1	1.36	-0.85	-2.8	-4.6	-9.6
1872	-9.55	1.81	-2.56	-3.0	-5.2	-10.3
1873	-15.9	0.90	-3.41	-5.1	-9.0	-18.4
1874	-15.5	0.45	-3.41	-5.1	-9.0	-18.5
1875	-15.7	1.36	-3.41	-4.9	-8.7	-17.8
1876	-17.4	0.90	-3.41	-5.5	-9.7	-19.9
1877	-23.9	0.90	-4.26	-7.6	-13.2	-27.3
1878	-23.1	1.36	-3.41	-7.1	-12.2	-25.2
1879	-27.8	0.90	-3.41	-8.5	-14.4	-30.3
1880	-22.9	1.36	-3.41	-7.0	-12.1	-25.0
1881	-33.9	2.26	-4.26	-10.1	-17.2	-35.9
1882	-33.3	2.26	-5.12	-10.1	-17.5	-36.2
1883	-35.2	0.90	-5.12	-11.1	-18.9	-39.4
1884	-36.1	0.45	-5.97	-11.6	-20.0	-41.6
1885	-37.2	0.45	-5.97	-11.9	-20.5	-42.7
1886	-39.1	1.36	-5.97	-12.3	-21.0	-43.7
1887	-39.7	0.45	-7.68	-13.1	-22.7	-46.9
1888	-37.7	1.36	-8.53	-12.4	-22.0	-44.9
1889	-45.0	0.45	-7.68	-14.6	-25.1	-52.2
1890	-45.8	-0.90	-7.68	-15.1	-26.1	-54.4
1891	-44.4	-2.26	-7.68	-15.1	-25.9	-54.3
1892	-49.1	-1.81	-7.68	-16.3	-27.9	-58.6
1893	-53.3	-0.90	-11.9	-18.2	-32.1	-66.1
1894	-59.9	-5.42	-12.8	-21.4	-37.4	-78.1
1895	-58.6	-5.42	-12.8	-21.0	-36.8	-76.8
1896	-58.8	-4.97	-11.9	-20.8	-36.2	-75.7
1897	-65.8	-5.42	-11.9	-22.9	-40.0	-83.1
1898	-65.2	-7.23	-12.8	-23.4	-40.6	-85.2
1899	-62.7	-11.3	-16.2	-24.4	-43.1	-90.2
1900	-65.2	-19.0	-15.4	-26.8	-46.8	-99.6
1901	-71.3	-19.0	-18.8	-29.4	-51.7	-109
1902	-70.2	-17.6	-6.82	-26.2	-43.3	-94.6
1903	-63.5	-8.14	-17.1	-24.1	-42.7	-88.7
1904	-68.8	-22.6	-20.5	-29.9	-52.9	-112
1905	-83.0	-26.3	-21.3	-35.1	-61.3	-131
1906	-86.6	-27.1	-20.5	-36.1	-62.9	-134
1907	-88.9	-36.2	-25.6	-40.2	-70.6	-151
1908	-106	-39.8	-26.4	-46.1	-80.5	-172
1909	-107	-39.3	-27.3	-46.6	-81.4	-174
1910	-102	-44.3	-29.0	-46.9	-82.1	-175
1911	-117	-51.1	-34.1	-53.7	-94.4	-202
1912	-107	-67.8	-35.0	-55.1	-96.9	-210
1913	-93.8	-73.2	-39.2	-53.7	-95.8	-206
1914	-106.0	-72.8	-36.7	-56.5	-99.7	-216
1915	-109.1	-77.3	-34.1	-58.0	-101	-220
1916	-119.0	-88.1	-40.1	-64.9	-114	-247
1917	-93.2	-101.0	-51.2	-63.0	-114	-245
1918	-80.5	-94.5	-41.8	-55.7	-99.7	-217
1919	-26.6	-86.3	-41.8	-38.1	-71.8	-155
1920	81.6	-169.0	-46.1	-75.2	-57.2	-134
1921	159	-99.0	-40.1	-79.2	9.5	19.9
1922	171	-33.4	-20.5	-62.2	52.7	117
1923	-6.38	-88.6	-40.9	-32.5	-62.9	-136
1924	-62.4	-75.5	-33.3	-43.9	-78.7	-171
1925	-98.8	-76.4	-23.9	-52.6	-89.9	-199
1926	-140	-157.0	-27.3	-85.4	-143	-324
1927	-194	-79.1	-27.3	-81.5	-137	-300
1928	-176	-70.5	-25.6	-73.8	-124	-272
1929	-150	-76.4	-24.7	-67.6	-114	-251
1930	-140	-70.5	-16.2	-61.5	-102	-227
1931	-106	-53.8	-9.38	-46.0	-75.6	-169
1932	-79.9	-38.9	-5.89	-34.0	-55.5	-125
1933	-170	-40.0	-4.86	-60.0	-96.6	-215
1934	-178	-48.4	-7.00	-64.8	-105	-233
1935	-212	-42.9	-8.53	-73.7	-119	-263
1936	-208	-47.0	-9.38	-73.7	-119	-264
1937	-322	-58.3	-12.8	-110.2	-178	-393
1938	-388	-46.1	-12.8	-126.5	-204	-447
1939	-361	-50.6	-19.6	-120.9	-197	-431
1940	-130	-72.8	-21.3	-60.0	-101	-224
1941	-32.2	-92.2	-28.1	-38.2	-68.2	-153
1942	-224	-101	-36.7	-97.9	-165	-362
1943	-240	-113	-34.1	-104.9	-176	-387
1944	-319	-115	-35.8	-128.3	-213	-470
1945	-191	-124	-31.6	-92.9	-156	-347
1946	-41.9	-184	-55.4	-69.8	-126	-281
1947	-15.3	-309	-72.5	-96.5	-173	-397
1948	148	-206	-57.2	-20.6	-48.5	-115
1949	322	-124	-41.8	53.2	72.4	156
1950	552	-113	-33.3	124.3	188	406
1951	427	-255	-50.3	49.5	65.2	122
1952	527	-214	-39.2	90.8	134	274
1953	641	-151	-23.0	142.7	220	467
1954	705	-139	-23.9	163.9	254	542
1955	891	-231	-27.3	194.4	300	633
1956	1021	-308	-44.4	209.2	320	669
1957	1021	-343	-36.7	202.3	310	641

MC-3, SOURCES

Computation of Index in 1954 Prices:

COL. A, Crude petroleum. Table MC-6, Col. D, times $2.77 (1954: value of output divided by output quantity).

COL. B, Bituminous coal and lignite. Table MC-10, Col. C, times $4.52 (1954: value of output divided by output quantity).

COL. C, Anthracite. Table MC-11, Col. C, times $8.53 (1954: value of output divided by output quantity).

COLS. D and E, Imports in 1902 and 1929 prices. Computed exactly as Col. F, except that average prices of 1902 and 1929 were used as weights in the computation. (For weights, see notes, below.)

COL. F, Imports in 1954 prices. Sum of Cols. A, B, and C.

MC-3, NOTES

The average values used as weights in computing the 1902- and 1929-weighted indexes are as follows:

Commodity	*1902 weights*	*1929 weights*
A Crude petroleum	$ .802/bbl.	$1.271/bbl.
B Bituminous coal	1.119/ton	1.78/ton
C Anthracite	1.84/ton	5.22/ton

Weighting data are from *Min. Yearbook 1954*, Vol. I, chapters for each mineral; *Min. Resources 1929*, Part II, pp. 425 and 685; and *Min. Resources 1905*, pp. 819 and 464.

MC-4. MINERAL FUELS: Consumption ($ mil.)

	Petroleum	Natural gas	Bituminous coal	Anthracite	Mineral fuels, consumption ($ mil.)		
					1902 weights	1929 weights	1954 weights
	($ million, 1954 weights)						
	A	B	C	D	E	F	G
1870	6		94	169	62	144	269
1871	4		105	165	63	144	274
1872	8		125	208	78	180	341
1873	12		144	214	85	194	370
1874	15		139	203	82	187	357
1875	9		149	193	82	181	351
1876	8		145	191	79	178	344
1877	13		156	214	89	200	383
1878	20		166	181	86	185	367
1879	27		184	254	108	241	465
1880	50		231	240	123	261	521
1881	43		237	267	129	277	547
1882	51	*	268	294	146	309	613
1883	30	1	294	323	152	329	648
1884	31	2	325	309	157	333	667
1885	24	8	325	320	161	341	677
1886	39	16	339	326	175	364	720
1887	39	24	401	351	200	410	815
1888	39	35	462	388	229	466	924
1889	53	25	433	380	218	447	891
1890	81	24	502	388	245	492	995
1891	106	18	529	423	264	532	1076
1892	91	16	570	439	271	549	1116
1893	81	15	579	447	272	550	1122
1894	77	15	533	429	255	519	1054
1895	88	14	606	481	287	584	1189
1896	110	14	615	451	289	579	1190
1897	102	15	660	436	296	585	1213
1898	88	17	746	442	317	619	1293
1899	96	23	863	498	363	707	1480
1900	111	24	940	472	381	729	1547
1901	121	27	1003	555	418	812	1706
1902	176	28	1157	345	428	769	1706
1903	214	30	1270	618	527	1000	2132
1904	255	31	1238	606	529	997	2130
1905	291	35	1397	640	588	1104	2363
1906	263	39	1523	585	603	1110	2410
1907	371	41	1749	703	716	1321	2864
1908	390	41	1464	683	647	1206	2578
1909	400	49	1677	663	702	1289	2789
1910	479	51	1840	690	773	1408	3060
1911	493	52	1785	736	774	1421	3066
1912	511	57	1966	683	816	1472	3217
1913	593	59	2088	728	880	1586	3468
1914	631	60	1840	715	827	1500	3246
1915	670	64	1926	750	869	1575	3410
1916	715	76	2183	741	951	1702	3715
1917	834	80	2391	801	1052	1878	4106
1918	906	73	2522	790	1099	1950	4291
1919	1019	75	2020	694	988	1748	3808
1920	1307	82	2301	730	1153	2018	4420
1921	1465	68	1772	699	1053	1852	4004
1922	1717	78	1930	483	1125	1908	4208
1923	2022	104	2346	740	1385	2388	5212
1924	1917	117	2188	687	1313	2256	4909
1925	2017	122	2255	545	1330	2246	4939
1926	1994	135	2409	657	1392	2375	5195
1927	2302	149	2260	636	1449	2456	5347
1928	2321	161	2255	626	1458	2467	5363
1929	2640	197	2350	608	1591	2668	5795
1930	2348	200	2057	575	1428	2402	5180
1931	2252	174	1681	497	1276	2140	4604
1932	2094	161	1388	430	1135	1902	4073
1933	2341	162	1437	422	1218	2029	4362
1934	2338	183	1555	472	1269	2124	4548
1935	2551	199	1609	435	1344	2232	4794
1936	2839	225	1844	453	1506	2488	5361
1937	3222	250	1948	429	1650	2710	5849
1938	2975	238	1519	385	1457	2391	5117
1939	3144	256	1700	423	1569	2579	5523
1940	3618	276	1948	417	1778	2906	6259
1941	3850	292	2224	448	1931	3153	6814
1942	3618	318	2441	481	1937	3172	6858
1943	3933	355	2685	486	2113	3446	7459
1944	4330	385	2667	505	2243	3658	7887
1945	4557	404	2531	439	2273	3684	7931
1946	4762	416	2260	459	2276	3695	7897
1947	5130	460	2468	410	2449	3950	8468
1948	5742	512	2350	427	2630	4238	9031
1949	5424	539	2016	321	2447	3917	8300
1950	6019	626	2052	340	2683	4286	9037
1951	6654	737	2120	315	2942	4678	9826
1952	6870	789	1894	300	2975	4724	9853
1953	7169	830	1930	238	3082	4870	10167
1954	7116	871	1641	229	3016	4759	9857
1955	7773	941	1912	201	3306	5207	10827
1956	8268	1002	1957	204	3498	5504	11431
1957	8268	1059	1871	177	3503	5501	11375

MC-4, SOURCES

Computation of Index in 1954 Prices:

COL. A, Petroleum. Table MC-8, Col. C, times $2.78 (1954 average value, Table MP-4, Col. L).

COL. B, Natural gas

1882-1944. Marketed production (Table MO-4, Col. B) times $.101/1,000 cu. ft. (1954 average vlaue at point of production, Table MP-6, Col. I).

1945-57. Marketed production adjusted for net exports and additions to storage (see notes), times $.101/1,000 cu. ft.

COL. C, Bituminous coal. Table MC-10, Col. G, times $4.52 (1954 price, Table MP-8, Col. I, divided by 1.12 to convert to short-ton price).

COL. D, Anthracite. Table MC-11, Col. E, times $8.52 (1954 average value, Table MP-9, Col. D).

COLS. E and F, Consumption indicators, mineral fuels, 1902 and 1929 prices. Computed exactly as Col. G, except that 1902 and 1929 prices were used as weights in the computation. (For weights, see notes, below.)

COL. G, Consumption indicator, mineral fuels, 1954 prices. Sum, Cols. A through D.

MC-4, NOTES

* Under $500,000.

COL. B. Natural gas consumption has been taken as equal to marketed production through 1944. Beginning with 1945, we have deducted the following from the production figures of Table MO-4 (billion cu. ft.):

	Net exports	*Net addition to storage*
1945	18	25
1946	18	19
1947	18	10
1948	19	57
1949	20	66
1950	26	55
1951	24	138
1952	20	177
1953	19	158
1954	22	102
1955	20	68
1956	26	136
1957	4	191

Source: *Min Yearbooks*, Vol. II, Natural Gas chapters, Table 1.

This definition of "consumption" differs from that used by the Bureau of Mines, in that it includes gas lost in producing natural gas liquids (a manufacturing operation) and gas "lost in transmission," which goes principally into motors that drive the pumps which push the gas through pipelines to points of consumption (a form of transportation). This latter use increased from 128 billion cubic feet in 1947 to 205 billion in 1957.

COLS. E and F. The weights used in the computation of the 1902- and 1929-weighted consumption indicators are as follows:

Commodity		*1902 price weights*	*1929 price weights*
A	Petroleum	$ .802/bbl.	$1.272/bbl.
B	Natural gas	.058/thous. cu. ft.	.082/thous cu. ft.
C	Bituminous coal	1.12/short ton	1.776/ton
D	Anthracite	1.84/short ton	5.22/ton

MC-5. MINERAL FUELS: Consumption in Btu

	Petroleum	Natural gas liquids	Natural gas	Bituminous coal and lignite	Anthracite coal	All mineral fuels (1000 trillion Btu)
	(trillion Btu)					
	A	B	C	D	E	F
1870	12			545	505	1.06
1871	9			608	493	1.11
1872	17			726	620	1.36
1873	24			833	640	1.50
1874	31			807	607	1.45
1875	19			865	577	1.46
1876	16			838	569	1.42
1877	28			907	640	1.58
1878	41			962	542	1.55
1879	57			1064	756	1.88
1880	104			1339	717	2.16
1881	90			1373	798	2.26
1882	107		4	1556	876	2.54
1883	62		8	1706	961	2.74
1884	65		26	1881	926	2.90
1885	49		82	1884	955	2.97
1886	81		169	1962	973	3.18
1887	81		259	2324	1046	3.71
1888	81		369	2680	1157	4.29
1889	110		269	2510	1131	4.02
1890	170		257	2908	1158	4.5
1891	222		197	3065	1263	4.7
1892	190		171	3301	1310	5.0
1893	169		160	3354	1334	5.0
1894	161		155	3092	1280	4.7
1895	184		147	3511	1435	5.3
1896	231		151	3563	1345	5.3
1897	213		160	3825	1300	5.5
1898	185		186	4323	1317	6.0
1899	200		240	5004	1486	6.9
1900	233		137	5450	1410	7.2
1901	253		194	5816	1657	7.9
1902	368		221	6707	1030	8.3
1903	447		257	7362	1843	9.9
1904	535		276	7179	1797	9.8
1905	610		344	8096	1910	11.0
1906	550		418	8829	1749	11.6
1907	777		438	10139	2098	13.5
1908	817		432	8489	2037	11.8
1909	837		517	9720	1978	13.1
1910	1004		547	10663	2060	14.3
1911	1032		551	10349	2197	14.1
1912	1071		604	11397	2038	15.1
1913	1242		626	12104	2171	16.2
1914	1321		636	10663	2135	14.8
1915	1404		676	11161	2239	15.5
1916	1496		809	12655	2213	17.2
1917	1746		855	13860	2389	18.9
1918	1897		775	14620	2357	19.6
1919	2134		802	11711	2071	16.7
1920	2738	42	827	13336	2179	19.1
1921	3068	50	682	10270	2082	16.2
1922	3596	56	785	11187	1443	17.1
1923	4234	90	1032	13598	2208	21.2
1924	4014	103	1170	12681	2050	20.0
1925	4222	124	1212	13074	1627	20.3
1926	4176	149	1335	13965	1961	21.6
1927	4820	179	1465	13100	1897	21.5
1928	4860	201	1588	13074	1871	21.6
1929	5527	248	1942	13624	1815	23.2
1930	4918	246	1969	11921	1718	20.8
1931	4715	205	1715	9746	1484	17.9
1932	4385	163	1594	8043	1283	15.5
1933	4901	150	1600	8332	1260	16.2
1934	4895	170	1819	9013	1410	17.3
1935	5342	181	1974	9327	1298	18.1
1936	5945	201	2221	10690	1351	20.4
1937	6745	231	2468	11292	1280	22.0
1938	6229	236	2348	8803	1148	18.8
1939	6583	257	2539	9851	1262	20.5
1940	7575	294	2726	11292	1245	23.1
1941	8062	364	2851	12890	1339	25.5
1942	7575	367	3102	14148	1435	26.6
1943	8236	379	3481	15563	1450	29.1
1944	9065	442	3775	15458	1509	30.2
1945	9541	491	3973	14672	1311	30.0
1946	9970	493	4089	13100	1369	29.0
1947	10742	564	4518	14305	1224	31.4
1948	12023	619	5033	13624	1275	32.6
1949	11356	660	5289	11685	958	29.9
1950	12603	783	6150	11895	1013	32.4
1951	13932	874	7248	12288	940	35.3
1952	14384	954	7760	10978	897	35.0
1953	15010	1006	8156	11187	711	36.1
1954	14900	1042	8554	9511	683	34.7
1955	16275	1196	9232	11083	599	38.4
1956	17313	1209	9834	11338	610	40.3
1957	17313	1242	10416	10838	528	40.3

MC-5, SOURCES

Col. A, Petroleum. Table MC-8, Col. C, times British thermal units per barrel: 5,800,000.

Col. B, Natural gas liquids. *Hist. Stat. 1960,* series M-84.

Col. C, Natural gas

1882-1919. Table MO-4, Col. B, times British thermal units per cubic foot of natural gas wet: 1,075.

1920-56. *Hist. Stat. 1960,* series M-83.

1957. *Min. Yearbook 1957,* Vol. II, p. 11.

Col. D, Bituminous coal and lignite. Table MC-10, Col. G, times British thermal units per ton: 26,200,000.

Col. E, Anthracite. Table MC-11, Col. E, times British thermal units per ton: 25,400,000.

Col. F, All mineral fuels, consumption. Sum of Cols. A through E.

MC-5, NOTES

The British thermal unit values are from Bureau of Mines, *Mineral Industry Surveys* (Monthly Petroleum Statement No. 425, Feb. 12, 1958), p. 21.

The natural gas series for 1882-1919 is for wet gas and has been multiplied by a Btu value which includes the liquids contained. For 1920-57 the series used is for dry gas.

MC-6. PETROLEUM: Imports and Net Imports

(million barrels)

	Imports of crude	Imports of refined	Total imports	Preferred series, net imports (Col. C minus Table MC-7)
	A	B	C	D
1870				-3.2
1871				-3.63
1872				-3.44
1873				-5.73
1874				-5.59
1875				-5.65
1876				-6.27
1877				-8.62
1878				-8.32
1879				-10.0
1880				-8.26
1881				-12.2
1882				-12.0
1883				-12.7
1884				-13.0
1885				-13.4
1886				-14.1
1887				-14.3
1888				-13.6
1889				-16.2
1890				-16.5
1891				-16.0
1892				-17.7
1893				†-19.2
1894				†-21.6
1895				†-21.1
1896				†-21.2
1897				†-23.7
1898				-23.5
1899				-22.6
1900				-23.5
1901				-25.7
1902				-25.3
1903				-22.9
1904				-24.8
1905				-29.9
1906				-31.2
1907				-32.0
1908				-38.2
1909	.070		.070	-38.7
1910	.56		.56	-36.9
1911	1.71		1.71	-42.0
1912	7.38		7.38	-38.4
1913	17.8		17.8	-33.8
1914	17.2		17.2	-38.2
1915	18.1		18.1	-39.3
1916	20.8	.4	21.2	-42.9
1917	30.1	1.4	31.5	-33.5
1918	37.7	1.2	39.0	-29.0
1919	52.8	1.4	54.2	-9.6
1920	106	2.6	109	29.4
1921	125	3.4	129	57.4
1922	127	8.7	136	61.7
1923	82.0	17.6	99.7	-2.3
1924	77.8	16.8	94.6	-22.5
1925	61.8	16.4	78.2	-35.6
1926	60.4	20.9	81.3	-50.6
1927	58.4	13.4	71.7	-69.9
1928	79.8	11.8	91.6	-63.4
1929	78.9	29.8	109	-54.1
1930	62.1	43.5	106	-50.5
1931	47.2	38.8	86.1	-38.3
1932	44.7	29.8	74.5	-28.8
1933	31.9	13.5	45.4	-61.3
1934	35.6	14.9	50.5	-64.0
1935	32.2	20.4	52.6	-76.4
1936	32.3	24.8	57.1	-74.9
1937	27.5	29.7	57.2	-116
1938	26.4	27.9	54.3	-140
1939	33.1	26.0	59.1	-130
1940	42.7	41.1	83.8	-46.7
1941	50.6	46.5	97.2	-11.6
1942	12.3	23.7	36.0	-80.9
1943	13.8	49.6	63.4	-86.5
1944	44.8	47.5	92.3	-115
1945	74.3	39.3	114	-69.0
1946	86.1	51.6	138	-15.1
1947	97.5	61.9	159	-5.5
1948	129	59.0	188	53.3
1949	154	81.9	236	116
1950	178	132	310	199
1951	179	129	308	154
1952	210	139	348	190
1953	236	141	378	231
1954	240	144	384	254
1955	285	170	456	321
1956	342	184	526	368
1957	373	200	573	368

MC-6, SOURCES

Col. A, Imports of crude petroleum
- 1909-12. *Min Resources 1913*, Part II, p. 1080.
- 1913-15. *Min. Resources 1916*, Part II, p. 849.
- 1916-48. *Petroleum Facts and Figures 1950*, pp. 1-3.
- 1949-55. *Petroleum Facts and Figures 1956*, p. 5.
- 1956-57. *Min. Yearbook 1957*, Vol. II, p. 346.

Col. B, Imports of refined petroleum
- 1916-48. *Petroleum Facts and Figures 1950*, pp. 1-3.
- 1949-55. *Petroleum Facts and Figures 1956*, p. 5.
- 1956-57. *Min. Yearbook 1957*, Vol. II, p. 346.

Col. C, Total imports. Col. A plus Col. B.

Col. D, Preferred series, net imports. Col. C minus Table MC-7, Col. H.

MC-6, NOTES

† Fiscal year.

See notes to Table MC-7 for general information on series. It is assumed that imports of crude oil were negligible prior to 1909 and that imports of refined oil were negligible prior to 1916.

MC-7. PETROLEUM: Exports

(million barrels)

	Min. Resources, exports of crude to foreign	Min. Resources, shipments of crude to territories	Petr. Facts and Figures, exports plus shipments	Preferred series, exports plus shipments	Min. Resources, exports of refined	Petr. Facts and Figures, exports of refined	Preferred series, exports of refined	Preferred series, exports of crude and refined (Col. D + Col. G)
	A	B	C	D	E	F	G	H
1870	.29			.29	2.9		2.9	3.2
1871	.27			.27	3.4		3.4	3.6
1872	.39			.39	3.0		3.0	3.4
1873	.47			.47	5.3		5.3	5.7
1874	.34			.34	5.2		5.2	5.6
1875	.39			.39	5.3		5.3	5.6
1876	.60			.60	5.7		5.7	6.3
1877	.69			.69	7.9		7.9	8.6
1878	.57			.57	7.8		7.8	8.3
1879	.68			.68	9.4		9.4	10.0
1880	.88			.88	7.4		7.4	8.3
1881	.96			.96	11.3		11.3	12.2
1882	1.1			1.1	10.9		10.9	12.0
1883	1.4			1.4	11.3		11.3	12.7
1884	1.9			1.9	11.1		11.1	13.0
1885	1.9			1.9	11.4		11.4	13.4
1886	1.8			1.8	12.3		12.3	14.1
1887	1.9			1.9	12.4		12.4	14.3
1888	1.8			1.8	11.8		11.2	13.6
1889	2.0			2.0	14.2		14.2	16.2
1890	2.3			2.3	14.2		14.2	16.5
1891	2.3			2.3	13.7		13.7	16.0
1892	2.5			2.5	15.2		15.2	17.7
1893†	2.7			2.7	16.5		16.5	19.2
1894†	2.9			2.9	18.7		18.7	21.6
1895†	2.6			2.6	18.4		18.4	21.1
1896†	2.6			2.6	18.6		18.6	21.2
1897†	2.9			2.9	20.8		20.8	23.7
1898	2.7			2.7	20.8		20.8	23.5
1899	2.8			2.8	19.8		19.8	22.6
1900	3.3			3.3	20.2		20.2	23.5
1901	3.0			3.0	22.7		22.7	25.7
1902	3.5			3.5	21.9		21.9	25.3
1903	3.0	.56		3.6	19.3		19.3	22.9
1904	2.6	.49		3.1	21.7		21.7	24.8
1905	3.0	.82		3.8	26.1		26.1	29.9
1906	3.5	1.0		4.5	26.7		26.7	31.2
1907	3.0	1.1		4.2	27.8		27.8	32.0
1908	3.6	1.4		5.0	33.3		33.3	38.2
1909	4.0	1.4		5.4	33.3		33.3	38.7
1910	4.3	1.7		6.0	31.5		31.5	37.5
1911	4.8	1.6		6.4	37.3		37.3	43.7
1912	4.5	1.0		5.5	40.3		40.3	45.8
1913	4.6	.78		5.4	46.2		46.2	51.6
1914	3.0	2.0		5.0	50.4		50.4	55.4
1915	3.8	2.0		5.7	51.7		51.7	57.4
1916	4.1	2.1	4.1	6.2	58.0	58.4	58.0	64.1
1917	4.1	2.1	4.9	6.2	59.0	59.6	59.0	65.2
1918	4.9	1.0	5.9	5.9	59.7	62.1	62.1	68.0
1919	6.0	.3	6.4	6.4		57.5	57.5	63.8
1920	8.8	.5	9.3	9.3		70.3	70.3	79.6
1921	8.9	.7	9.6	9.6		62.0	62.0	71.6
1922	10.2	.6	10.8	10.8		63.5	63.5	74.3
1923			17.5	17.5		84.4	84.4	102
1924			18.2	18.2		98.9	98.9	117
1925			13.3	13.3		100	100	114
1926			15.4	15.4		116	116	132
1927			15.8	15.8		126	126	142
1928			19.0	19.0		136	136	155
1929			26.4	26.4		137	137	163
1930			23.7	23.7		133	133	156
1931			25.5	25.5		98.9	98.9	124
1932			27.4	27.4		75.9	75.9	103
1933			36.6	36.6		70.1	70.1	107
1934			41.1	41.1		73.4	73.4	114
1935			51.4	51.4		77.6	77.6	129
1936			50.3	50.3		81.7	81.7	132
1937			67.2	67.2		106	106	173
1938			77.2	77.2		116	116	194
1939			72.1	72.1		117	117	189
1940			51.5	51.5		79.0	79.0	130
1941			33.2	33.2		75.6	75.6	109
1942			33.8	33.8		83.1	83.1	117
1943			41.3	41.3		109	109	150
1944			34.2	34.2		173	173	208
1945			33.0	33.0		150	150	183
1946			42.4	42.4		111	111	153
1947			46.4	46.4		118	118	164
1948			39.7	39.7		94.9	95.0	135
1949			33.1	33.1		86.4	86.4	120
1950			34.8	34.8		76.5	76.5	111
1951			28.6	28.6		125	125	154
1952			26.7	26.7		132	132	158
1953			19.9	19.9		127	127	147
1954			13.6	13.6		116	116	130
1955			11.6	11.6		123	123	135
1956			28.6	28.6		129	129	158
1957			50.0	50.0		155	155	205

MC-7, SOURCES

COL. A, Exports of crude petroleum
1870. *Min. Resources 1889-90,* p. 301, converted from gallons to barrels; average of fiscal years 1870 and 1871.
1871-94. *Min. Resources 1897,* Vol. II, p. 12, converted from gallons to barrels.
1895-1904. *Min. Resources 1904,* Part II, p. 694.
1905-09. *Min. Resources 1909,* Part II, p. 382.
1910-16. *Min. Resources 1916,* Part II, p. 856.
1917-18. *Min. Resources 1918,* Part II, p. 1135.
1919-22. *Min. Resources 1922,* Part II, p. 390.

COL. B, Crude shipments to territories
1903-04. *Min. Resources 1904,* Part II, pp. 726-27, Alaska plus Hawaii converted from gallons to barrels.
1905-09. *Min. Resources 1909,* Part II, p. 380, Alaska plus Hawaii, converted from gallons to barrels.
1910-22. *Min. Resources 1922,* Part II, p. 390.

COL. C, Exports of crude petroleum, plus shipments to territories
1916-49. *Petroleum Facts and Figures 1950,* pp. 1-3.
1950-54. *Petroleum Facts and Figures 1956,* p. 5.
1955-57. *Min. Yearbook 1957,* Vol. II, p. 346.

COL. D, Preferred series, exports of crude plus shipments of crude to territories
1870-1902. Col. A, transcribed.
1903-17. Col. A plus Col. B.
1918-57. Col. C, transcribed.

COL. E, Exports of refined petroleum. Same sources as Col. A, total minus crude, converted from gallons to barrels.

COL. F. Exports of refined. Same sources as Col. C.

COL. G, Preferred series, exports of refined
1870-1917. Col. E, transcribed.
1918-57. Col. F, transcribed.

COL. H, Preferred series, exports of petroleum. Sum of Cols. D and G.

MC-7, NOTES

† Fiscal year.

The American Petroleum Institute has taken its series on foreign trade from the Bureau of Mines, which has attempted to estimate trade figures relating solely to continental United States. Consequently the export figures include shipments from continental United States to noncontiguous territories; and the import figures (see Table MC-6) include shipments from territories to the continental United States and exclude imports from foreign countries to territories.

For data prior to 1918, various issues of *Mineral Resources* have been used. In these early volumes, shipments to and from territories were reported separately, and they have been combined with exports to foreign countries to provide a consistent series. Territorial shipments of refined oils were insignificant prior to 1918, but shipments of crude oil to territories amounted to more than 50% of exports to foreign countries during 1914-17. No data are available prior to 1903. Since these shipments averaged 26% of exports to foreign countries during 1903-07, it cannot be assumed that they were negligible for the years for which no data are available. There is no way of determining the resultant degree of inconsistency within the crude oil exports series. The consistency of the series representing trade of total crude and refined, however, will not be significantly affected by the absence of data on territorial crude shipments.

The slight inconsistency between the Mines data and Institute figures for the period of overlap (1916-18) has not been explored.

The figures for exports of refined petroleum products do not reflect the shift from the less refined to the more refined products. The following table gives an indication of this shift:

Value and Volume of Petroleum and Petroleum Products Exports as Percent of Totals

	1910-14		*1951-54*	
	volume	*value*	*volume*	*value*
Crude	10%	5%	15%	9%
Kerosene	57	54	5	3
Lubricating oils	10	20	10	33
Gasoline and motor fuels	23	20	25	23
Residual oil			19	6
Distillate oil			19	13
Other			7	14
Total	100	100	100	100

MC-8. PETROLEUM: Consumption

(million barrels)

	Output	Net imports	Consumption
	A	B	C
1870	5.3	-3.2	2.1
1871	5.2	-3.63	1.6
1872	6.3	-3.44	2.9
1873	9.9	-5.73	4.2
1874	10.9	-5.59	5.3
1875	8.8	-5.65	3.2
1876	9.1	-6.27	2.8
1877	13.4	-8.62	4.8
1878	15.4	-8.32	7.1
1879	19.9	-10.0	9.9
1880	26.3	-8.26	18.0
1881	27.7	-12.2	15.5
1882	30.4	-12.0	18.4
1883	23.4	-12.7	10.7
1884	24.2	-13.0	11.2
1885	21.9	-13.4	8.5
1886	28.1	-14.1	14.0
1887	28.3	-14.3	14.0
1888	27.6	-13.6	14.0
1889	35.2	-16.2	19.0
1890	45.8	-16.5	29.3
1891	54.3	-16.0	38.3
1892	50.5	-17.7	32.8
1893	48.4	†-19.2	29.2
1894	49.3	†-21.6	27.7
1895	52.9	†-21.1	31.8
1896	61.0	†-21.2	39.8
1897	60.5	†-23.7	36.8
1898	55.4	-23.5	31.9
1899	57.1	-22.6	34.5
1900	63.6	-23.5	40.1
1901	69.4	-25.7	43.7
1902	88.8	-25.3	63.5
1903	100	-22.9	77
1904	117	-24.8	92
1905	135	-29.9	105
1906	126	-31.2	95
1907	166	-32.0	134
1908	179	-38.2	141
1909	183	-38.7	144
1910	210	-36.9	173
1911	220	-42.0	178
1912	223	-38.4	185
1913	248	-33.8	214
1914	266	-38.2	228
1915	281	-39.3	242
1916	301	-42.9	258
1917	335	-33.6	301
1918	356	-29.0	327
1919	378	-9.6	368
1920	443	29.4	472
1921	472	57.4	529
1922	558	61.7	620
1923	732	-2.3	730
1924	714	-22.5	692
1925	764	-35.6	728
1926	771	-50.6	720
1927	901	-69.9	831
1928	901	-63.4	838
1929	1007	-54.1	953
1930	898	-50.5	848
1931	851	-38.3	813
1932	785	-28.8	756
1933	906	-61.3	845
1934	908	-64.0	844
1935	997	-76.4	921
1936	1100	-74.9	1025
1937	1279	-116	1163
1938	1214	-140	1074
1939	1265	-130	1135
1940	1353	-46.7	1306
1941	1402	-11.6	1390
1942	1387	-80.9	1306
1943	1506	-86.5	1420
1944	1678	-115	1563
1945	1714	-69.0	1645
1946	1734	-15.1	1719
1947	1857	-5.5	1852
1948	2020	53.3	2073
1949	1842	116	1958
1950	1974	199	2173
1951	2248	154	2402
1952	2290	190	2480
1953	2357	231	2588
1954	2315	254	2569
1955	2485	321	2806
1956	2617	368	2985
1957	2617	368	2985

MC-8, SOURCES

Col. A, Output. Table MO-4, Col. A, transcribed.
Col. B, Net imports. Table MC-6, Col. D, transcribed.
Col. C, Consumption. Sum, Cols. A and B.

MC-8, NOTES

† Fiscal year.

MC-9, SOURCES

Col. A, Table MO-4, Col. A, transcribed.
Col. B
1911-54. *Petroleum Facts and Figures 1950*, p. 202, and *1956*, p. 182, "Natural gasoline (including cycle products) produced."
1955-57. *Min. Yearbook 1957*, Vol. II, Table 3.
Col. C, *Petroleum Facts and Figures 1950*, p. 225, "Benzol produced."
Col. D, The sum of Cols. A, B, and C.
Col. E, Table MC-6, Col. D, transcribed.
Col. F, Apparent consumption. Sum of Cols. D and E.
Col. G
1918-55. *Petroleum Facts and Figures 1950*, pp. 1-3, and *1956*, p. 5, "Domestic demand."
1956-57. *Min. Yearbook 1957*, Vol. II, p. 346.
Col. H, Ratio, Col. G/Col. F.
Col. I, Preferred series
1870-1917. Col. F, transcribed.
1918-57. Col. G, transcribed.

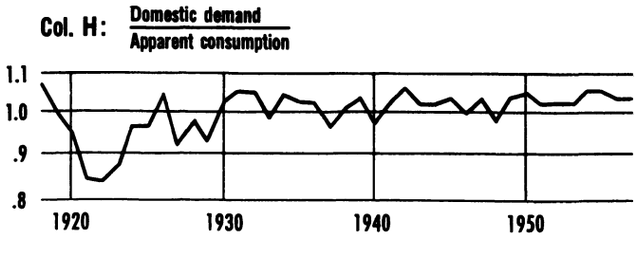
MC-9, NOTES

† Fiscal year.
[a] No longer reported separately by Bureau of Mines.

Total domestic demand in *Petroleum Facts and Figures* refers to domestic production of crude oil, natural gasoline (including cycle products), and benzol plus imports and minus exports of crude and refined products, plus or minus changes in stocks.

In order to approximate this series, it has been necessary to include production of natural gasoline and benzol in our estimates of apparent consumption (Col. F).

The remaining differences between apparent consumption and domestic demand are due entirely to changes in stocks, since both series have been taken or derived from the same table. (Crude oil production figures in Table MO-4 are identical to those in *Petroleum Facts and Figures*.)



MC-9. PETROLEUM AND NATURAL GASOLINE: Consumption

(million barrels)

	Crude petroleum output	Natural gasoline produced	Benzol produced	Total production	Petroleum net imports	Apparent consumption	Domestic demand	Col. G / Col. F	Preferred series, consumption
	A	B	C	D	E	F	G	H	I
1870	5.3			5.3	-3.2	2.1			2.1
1871	5.2			5.2	-3.63	1.6			1.6
1872	6.3			6.3	-3.44	2.9			2.9
1873	9.9			9.9	-5.73	4.2			4.2
1874	10.9			10.9	-5.59	5.3			5.3
1875	8.8			8.8	-5.65	3.2			3.2
1876	9.1			9.1	-6.27	2.8			2.8
1877	13.4			13.4	-8.62	4.8			4.8
1878	15.4			15.4	-8.32	7.1			7.1
1879	19.9			19.9	-10.0	9.9			9.9
1880	26.3			26.3	-8.26	18.0			18.0
1881	27.7			27.7	-12.2	15.5			15.5
1882	30.4			30.4	-12.0	18.4			18.4
1883	23.4			23.4	-12.7	10.7			10.7
1884	24.2			24.2	-13.0	11.2			11.2
1885	21.9			21.9	-13.4	8.5			8.5
1886	28.1			28.1	-14.1	14.0			14.0
1887	28.3			28.3	-14.3	14.0			14.0
1888	27.6			27.6	-13.6	14.0			14.0
1889	35.2			35.2	-16.2	19.0			19.0
1890	45.8			45.8	-16.5	29.3			29.3
1891	54.3			54.3	-16.0	38.3			38.3
1892	50.5			50.5	-17.7	32.8			32.8
1893	48.4			48.4	†-19.2	29.2			29.2
1894	49.3			49.3	†-21.6	27.7			27.7
1895	52.9			52.9	†-21.1	31.8			31.8
1896	61.0			61.0	†-21.2	39.8			39.8
1897	60.5			60.5	†-23.7	36.8			36.8
1898	55.4			55.4	-23.5	31.9			31.9
1899	57.1			57.1	-22.6	34.5			34.5
1900	63.6			63.6	-23.5	40.1			40.1
1901	69.4			69.4	-25.7	43.7			43.7
1902	88.8			88.8	-25.3	63.5			63.5
1903	100			100	-22.9	77.1			77.1
1904	117			117	-24.8	92.2			92.2
1905	135			135	-29.9	105			105
1906	126			126	-31.2	94.8			94.8
1907	166			166	-32.0	134			134
1908	179			179	-38.2	141			141
1909	183			183	-38.7	144			144
1910	210			210	-36.9	173			173
1911	220	.17		220	-42.0	178			178
1912	223	.29		223	-38.4	185			185
1913	248	.57		249	-33.8	215			215
1914	266	1.02		267	-38.2	229			229
1915	281	1.5		283	-39.3	244			244
1916	301	2.5		303	-42.9	260			260
1917	335	5.2		340	-33.6	306			306
1918	356	6.7	1.3	364	-29.0	335	359	1.07	359
1919	378	8.4	1.5	388	-9.6	378	375	.992	375
1920	443	9.2	1.8	454	29.4	483	456	.944	456
1921	472	11	1.3	484	57.4	541	457	.845	457
1922	558	12	1.7	572	61.7	634	531	.838	531
1923	732	19	2.3	753	-2.3	751	652	.868	652
1924	714	22	2.2	738	-22.5	716	688	.961	688
1925	764	27	1.9	793	-35.6	757	727	.960	727
1926	771	32	2.1	805	-50.6	754	781	1.04	781
1927	901	39	2.6	943	-69.9	873	802	.919	802
1928	901	43	2.8	947	-63.4	884	860	.973	860
1929	1007	53	3.1	1063	-54.1	1009	940	.932	940
1930	898	53	2.7	954	-50.5	904	926	1.02	926
1931	851	44	1.8	897	-38.3	858	903	1.05	903
1932	785	36	1.0	822	-28.8	793	835	1.05	835
1933	906	34	1.4	941	-61.3	880	868	.986	868
1934	908	37	1.7	947	-64.0	883	920	1.04	920
1935	997	39	1.9	1038	-76.4	962	984	1.02	984
1936	1100	43	2.5	1145	-74.9	1070	1093	1.02	1093
1937	1279	49	2.8	1331	-116	1215	1170	.963	1170
1938	1214	51	1.8	1267	-140	1127	1137	1.01	1137
1939	1265	52	2.5	1320	-130	1190	1231	1.03	1231
1940	1353	56	3.2	1412	-46.7	1365	1327	.972	1327
1941	1402	64	3.4	1469	-11.6	1457	1486	1.02	1486
1942	1387	65	2.4	1454	-80.9	1373	1450	1.06	1450
1943	1506	66	2.4	1574	-86.5	1488	1521	1.02	1521
1944	1678	72	2.4	1752	-115	1637	1671	1.02	1671
1945	1714	78	2.9	1795	-69.0	1726	1773	1.03	1773
1946	1734	82	2.1	1818	-15.1	1803	1793	.994	1793
1947	1857	87	.69	1945	-5.5	1940	1990	1.03	1990
1948	2020	94	.36	2114	53.3	2167	2114	.976	2114
1949	1842	99	[a]	1941	116	2057	2118	1.03	2118
1950	1974	110	[a]	2084	199	2283	2375	1.04	2375
1951	2248	118	[a]	2366	154	2520	2570	1.02	2570
1952	2290	121	[a]	2411	190	2601	2664	1.02	2664
1953	2357	127	[a]	2484	231	2715	2775	1.02	2775
1954	2315	128	[a]	2443	254	2697	2832	1.05	2832
1955	2484	139	[a]	2624	321	2945	3088		3088
1956	2617	138	[a]	2755	368	3123	3213		3213
1957	2617	137	[a]	2754	368	3122	3219		3219

MC-10. BITUMINOUS COAL AND LIGNITE: Net Imports and Consumption

(million short tons)

	Imports	Exports	Preferred series, net imports	Production	Apparent consumption	Reported consumption	Preferred series, consumption
	A	B	C	D	E	F	G
1870	.5	.1	.3	20.5	20.8		20.8
1871	.5	.1	.3	22.9	23.2		23.2
1872	.5	.2	.4	27.3	27.7		27.7
1873	.5	.3	.2	31.6	31.8		31.8
1874	.6	.4	.1	30.7	30.8		30.8
1875	.5	.2	.3	32.7	33.0		33.0
1876	.4	.3	.2	31.8	32.0		32.0
1877	.6	.4	.2	34.4	34.6		34.6
1878	.6	.4	.3	36.4	36.7		36.7
1879	.5	.3	.2	40.4	40.6		40.6
1880	.5	.2	.3	50.8	51.1		51.1
1881	.7	.2	.5	51.9	52.4		52.4
1882	.9	.4	.5	58.9	59.4		59.4
1883	.7	.5	.2	64.9	65.1		65.1
1884	.8	.7	.1	71.7	71.8		71.8
1885	.9	.8	.1	71.8	71.9		71.9
1886	.9	.6	.3	74.6	74.9		74.9
1887	.9	.8	.1	88.6	88.7		88.7
1888	1.2	1	.3	102	102.3		102.3
1889	1.1	1	.1	95.7	95.8		95.8
1890	1.0	1.3	-.2	111	111		111
1891	1.2	1.6	-.5	118	117		117
1892	1.5	1.9	-.4	127	126		126
1893	1.2	2.0	-.2	128	128		128
1894	1.3	2.4	-1.2	119	118		118
1895	1.4	2.7	-1.2	135	134		134
1896	1.4	2.5	-1.1	138	136		136
1897	1.4	2.7	-1.2	148	146		146
1898	1.4	3.0	-1.6	167	165		165
1899	1.4	3.9	-2.5	193	191		191
1900	1.9	6.1	-4.2	212	208		208
1901	2.2	6.5	-4.2	226	222		222
1902	2.2	6.0	-3.9	260	256		256
1903	4.0	5.8	-1.8	283	281		281
1904	2.2	7.2	-5.0	279	274		274
1905	1.7	7.5	-5.8	315	309		309
1906	2.0	8.0	-6.0	343	337		337
1907	1.9	9.9	-8.0	395	387		387
1908	2.2	11.1	-8.8	333	324		324
1909	1.4	10.1	-8.7	380	371		371
1910	1.8	11.7	-9.8	417	407		407
1911	2.0	13.3	-11.3	406	395		395
1912	1.5	16.5	-15.0	450	435		435
1913	1.8	18.0	-16.2	478	462		462
1914	1.5	17.6	-16.1	423	407		407
1915	1.7	18.8	-17.1	443	426		426
1916	1.7	21.2	-19.5	503	483		483
1917	1.4	23.8	-22.4	552	529		529
1918	1.5	22.4	-20.9	579	558		558
1919	1.0	20.1	-19.1	466	447		447
1920	1.2	38.5	-37.3	569	531	509	509
1921	1.3	23.1	-21.9	416	394	392	392
1922	5.1	12.4	-7.4	422	415	427	427
1923	1.9	21.4	-19.6	565	545	519	519
1924	.4	17.1	-16.7	484	467	484	484
1925	.6	17.5	-16.9	520	503	499	499
1926	.5	35.3	-34.8	573	539	533	533
1927	.6	18.0	-17.5	518	500	500	500
1928	.5	16.2	-15.6	501	485	499	499
1929	.5	17.4	-16.9	535	518	520	520
1930	.2	15.9	-15.6	467	452	455	455
1931	.2	12.1	-11.9	382	370	372	372
1932	.2	8.8	-8.6	310	301	307	307
1933	.2	9.0	-8.8	334	325	318	318
1934	.2	10.9	-10.7	359	349	344	344
1935	.2	9.7	-9.5	372	363	356	356
1936	.3	10.6	-10.4	439	429	408	408
1937	.3	13.1	-12.9	446	433	431	431
1938	.2	10.5	-10.2	349	338	336	336
1939	.4	11.6	-11.2	395	384	376	376
1940	.4	16.5	-16.1	461	445	431	431
1941	.4	20.7	-20.4	514	494	492	492
1942	.5	22.9	-22.4	583	560	540	540
1943	.8	25.8	-25.1	590	565	594	594
1944	.6	26.0	-25.4	620	594	590	590
1945	.5	28.0	-27.5	578	550	560	560
1946	.4	41.2	-40.8	534	493	500	500
1947	.3	68.7	-68.4	631	562	546	546
1948	.3	45.9	-45.6	600	554	520	520
1949	.3	27.8	-27.5	438	410	446	446
1950	.3	25.5	-25.1	516	491	454	454
1951	.3	56.7	-56.4	534	477	469	469
1952	.3	47.6	-47.4	467	419	419	419
1953	.2	33.8	-33.5	457	424	427	427
1954	.2	31.0	-30.8	392	361	363	363
1955	.3	51.3	-51.0	465	414	423	423
1956	.4	68.6	-68.2	501	433	433	433
1957	.4	76.3	-75.9	493	417	414	414

MC-10, SOURCES

Col. A, Imports
- 1870-89. *Min. Resources 1897*, Vol. I, p. 390.
- 1890-57. *Min. Yearbook 1957*, Vol. II, p. 49.

Col. B, Exports. Same sources as Col. A.

Col. C, Preferred series, net imports. Col. A minus Col. B.

Col. D, Production. Table MO-5, Col. B, transcribed.

Col. E, Apparent consumption. Col. C plus Col. D.

Col. F, Reported consumption
- 1920-55. *Mineral Industry Surveys* (Bureau of Mines, Monthly Petroleum Statement No. 425, Feb. 12, 1958), Table 3, p. 22, Col. 1.
- 1956-57. *Min. Yearbook 1957*, Vol. II, p. 122.

Col. G, Preferred series, consumption
- 1870-1919. Col. E, transcribed.
- 1920-57. Col. F, transcribed.

MC-11. ANTHRACITE: Net Imports and Consumption

(million short tons)

	Imports	Exports	Net imports	Production	Preferred series, apparent consumption
	A	B	C	D	E
1870		.1	-.1	20.0	19.9
1871	*	.2	-.1	19.5	19.4
1872	*	.3	-.3	24.7	24.4
1873	*	.4	-.4	25.6	25.2
1874	*	.4	-.4	24.3	23.9
1875	*	.4	-.4	23.1	22.7
1876	*	.4	-.4	22.8	22.4
1877	*	.5	-.5	25.7	25.2
1878	*	.4	-.4	21.7	21.3
1879	*	.4	-.4	30.2	29.8
1880	*	.4	-.4	28.6	28.2
1881	*	.5	-.5	31.9	31.4
1882	*	.6	-.6	35.1	34.5
1883	*	.6	-.6	38.5	37.9
1884	*	.7	-.7	37.2	36.3
1885	*	.7	-.7	38.3	37.6
1886	*	.7	-.7	39.0	38.3
1887	*	.9	-.9	42.1	41.2
1888	*	1.1	-1.0	46.6	45.6
1889	*	1.0	-.9	45.5	44.6
1890	*	.9	-.9	46.5	45.6
1891	*	1.0	-.9	50.7	49.7
1892	.1	1.0	-.9	52.5	51.6
1893	.1	1.5	-1.4	54.0	52.5
1894	.1	1.6	-1.5	51.9	50.4
1895	.2	1.6	-1.5	58.0	56.5
1896	.1	1.5	-1.4	54.3	52.9
1897	*	1.5	-1.4	52.6	51.2
1898	*	1.5	-1.5	53.4	51.9
1899	*	1.9	-1.9	60.4	58.5
1900	*	1.9	-1.8	57.4	55.5
1901	*	2.2	-2.2	67.5	65.2
1902	.2	1.0	-.8	41.4	40.5
1903	.2	2.2	-2.0	74.6	72.6
1904	.1	2.5	-2.4	73.2	70.7
1905	*	2.5	-2.5	77.7	75.2
1906	*	2.5	-2.4	71.3	68.8
1907	*	3.0	-3.0	85.6	82.6
1908	*	3.1	-3.1	83.3	80.2
1909	*	3.2	-3.2	81.1	77.9
1910	*	3.4	-3.4	84.5	81.1
1911	*	4.0	-4.0	90.5	86.5
1912	*	4.1	-4.1	84.4	80.2
1913	*	4.6	-4.6	91.5	85.5
1914	*	4.3	-4.3	90.8	84.0
1915	*	4.0	-4.0	89.0	88.1
1916	*	4.7	-4.7	87.6	87.1
1917	*	6.0	-6.0	99.6	94.1
1918	*	5.0	-4.9	98.8	92.8
1919	.1	5.0	-4.9	88.1	81.5
1920	*	5.4	-5.4	89.6	85.8
1921	*	4.7	-4.7	90.5	82.0
1922	.2	2.6	-2.4	54.7	56.8
1923	.3	5.1	-4.8	93.3	86.9
1924	.1	4.0	-3.9	87.9	80.7
1925	.4	3.2	-2.8	61.8	64.1
1926	.8	4.0	-3.2	84.4	77.2
1927	.1	3.3	-3.2	80.1	74.7
1928	.4	3.3	-3.0	75.3	73.6
1929	.5	3.4	-2.9	73.8	71.5
1930	.7	2.5	-1.9	69.4	67.6
1931	.6	1.8	-1.1	59.6	58.4
1932	.6	1.3	-.69	49.9	50.5
1933	.5	1.0	-.57	49.5	49.6
1934	.5	1.3	-.82	57.2	55.5
1935	.6	1.6	-1.0	52.2	51.1
1936	.6	1.7	-1.1	54.6	53.2
1937	.4	1.9	-1.5	51.9	50.4
1938	.4	1.9	-1.5	46.1	45.2
1939	.3	2.6	-2.3	51.5	49.7
1940	.1	2.7	-2.5	51.5	49.0
1941	.1	3.4	-3.3	56.4	52.7
1942	.1	4.4	-4.3	60.3	56.5
1943	.2	4.1	-4.0	60.6	57.1
1944	*	4.2	-4.2	63.7	59.4
1945	*	3.7	-3.7	54.9	51.6
1946	*	6.5	-6.5	60.5	53.9
1947	*	8.5	-8.5	57.2	48.2
1948	*	6.7	-6.7	57.1	50.2
1949		4.9	-4.9	42.7	37.7
1950	*	3.9	-3.9	44.1	39.9
1951	*	6.0	-5.9	42.7	37.0
1952	*	4.6	-4.6	40.6	35.3
1953	*	2.7	-2.7	30.9	28.0
1954	*	2.8	-2.8	29.1	26.9
1955	*	3.2	-3.2	26.2	23.6
1956	*	5.2	-5.2	28.9	24.0
1957	*	4.3	-4.3	25.3	20.8

MC-11, SOURCES

Col. A, Imports
1870-89. *Min. Resources 1897*, Vol. I, p. 309.
1890-1957. *Min. Yearbook 1957*, Vol. II, pp. 144-45.
Col. B, Exports. Same sources as Col. A.
Col. C, Net imports. Col. A minus Col. B.
Col. D, Production. Table MO-6, Col. B, transcribed.
Col. E, Preferred series, apparent consumption
1870-89. Col. C plus Col. D.
1890-1957. *Min. Yearbook 1957*, Vol. II, pp. 144-45.

MC-11, NOTES

* Less than 50,000 tons.

Imports and exports for 1870-85 are on a fiscal year (ending June 30) basis.

MC-12. METALS: Net Imports

	Iron	Manganese	Nickel	Molybdenum	Tungsten	Chromium	Copper	Lead	Zinc	Bauxite
	A	B	C	D	E	F	G	H	I	J
1870						*	-1.9	10.8	1.2	
1871			*				-2.2	11.3	1.2	
1872	.2		*				.8	9.4	1.5	
1873	.3		*				2.6	9.1	1.2	
1874	.4		*				*	5.5	.6	
1875	.4		*				-1.7	4.1	.6	
1876	.1		*				-3.2	1.7	.3	
1877	.2		*				-3.2	1.7	*	
1878	.2		*				-3.0	1.0	-.1	
1879	1.9		*				-4.5	.2	*	
1880	3.4		*			*	.1	1.0	.6	
1881	5.4		*			.1	-1.7	.5	.2	
1882	4.1		.1			*	-.9	.7	1.4	
1883	3.4		.1			*	-7.8	.7	1.3	
1884	3.4		.1			.1	-16.4	.5	.4	
1885	2.7		*			*	-17.9	.7	.4	
1886	7.2		.1			.1	-9.6	2.2	.3	
1887	8.2		.1			.1	-9.4	1.0	.9	
1888	4.1		.1			.1	-17.9	.2	.3	
1889	5.9	.2	.1			.2	-17.6	.5	.1	
1890	8.6	1.3	.2			.1	-9.2	3.6	-.4	
1891	6.3	1.1	(.2)			.1	-26.8	5.3	-.8	
1892	5.6	2.2	.2			.1	-22.3	6.7	-.8	
1893	3.7	2.6	.7			.2	-44.7	7.4	-.2	
1894	1.2	1.7	.2			.1	-40.4	8.6	*	
1895	3.6	3.3	.8			.2	-31.6	18.5	.1	
1896	4.7	1.2	.7			.2	-67.8	5.8	-1.3	
1897	3.4	4.5	.5			.3	-67.3	5.8	-2.5	
1898	1.3	4.4	1.9			.4	-67.3	2.2	-2.4	
1899	4.3	7.1	1.2			.4	-44.1	1.2	-3.8	
1900	5.9	9.7	1.8			.5	-61.0	-1.2	-7.6	
1901	6.2	6.3	5.1			.5	-12.8	1.7	-5.3	
1902	7.4	8.9	8.6			1.0	-54.1	5.5	-7.1	
1903	6.2	5.5	9.5			.6	-41.8	4.3	-5.2	
1904	1.9	4.1	3.6			.6	-97.8	5.3	-6.0	
1905	4.4	9.7	6.2			1.4	-87.0	7.2	-4.3	
1906	5.5	8.4	6.8			1.1	-62.9	7.4	-4.8	
1907	6.6	7.9	3.0			1.1	-74.2	4.8	*	
1908	3.2	6.8	2.2			.7	-118	6.2	-2.9	
1909	8.5	8.0	3.2			1.0	-98.3	5.5	2.5	
1910	12.7	9.2	5.2			1.0	-96.8	7.2	-1.2	
1911	7.2	6.7	2.0			1.0	-121	-5.8	-2.7	
1912	6.2	11.4	6.4		4.2	1.4	-101	1.9	-1.2	
1913	10.7	13.1	5.9		2.3	1.7	-139	.7	-1.6	
1914	5.5	10.7	2.8		1.5	2.0	-142	-14.9	-10.4	
1915	4.3	12.1	9.1		9.0	2.0	-96.4	-19.0	-13.1	-.1
1916	1.0	21.8	11.8		20.0	3.1	-86.5	-19.2	-10.4	-.2
1917	-1.1	23.9	15.5		24.6	1.9	-151	-5.0	-21.6	-.1
1918	-3.2	18.6	16.0		59.2	2.6	-46.7	-1.4	-12.0	-.1
1919	-3.6	12.6	8.8		47.4	1.6	-25.1	4.3	-17.7	-.1
1920	.9	22.7	12.7		9.8	4.0	-40.8	17.0	-9.5	.2
1921	-.8	14.9	.9		8.1	2.1	-73.7	9.1	1.4	.2
1922	3.7	16.1	1.4		8.3	2.4	-56.0	8.2	-5.5	*
1923	11.4	15.9	9.5		.2	3.4	-39.1	17.3	-8.4	.4
1924	10.1	19.1	8.4		.4	3.2	-87.0	9.8	-11.5	1.1
1925	10.8	23.3	9.5	-.3	2.7	4.0	-105	1.2	-20.7	2.5
1926	11.6	28.0	10.3	-.5	8.0	5.7	-43.7	13.2	-18.8	1.8
1927	11.9	23.6	9.5	-.9	6.8	5.9	-78.7	5.3	-13.2	2.1
1928	8.1	16.2	16.3	-1.5	9.0	5.7	-72.3	6.0	-6.3	2.1
1929	12.7	25.1	22.5	-2.0	18.8	8.4	*	6.7	-3.4	2.2
1930	13.9	22.2	13.5	-2.3	11.6	8.6	22.2	3.8	.5	2.8
1931	7.1	19.0	8.0	-1.9	.5	5.6	22.2	4.8	-1.0	2.0
1932	3.4	4.2	4.8	-1.7	.3	2.3	23.5	.5	-1.1	1.6
1933	4.9	5.9	11.8	-4.6	1.0	3.1	-7.3	-5.3	-.2	1.2
1934	5.7	12.9	10.7	-6.8	2.7	5.1	-42.7	*	.1	.9
1935	5.7	14.5	18.3	-7.5	2.6	6.9	-18.0	1.7	.8	.9
1936	11.0	30.8	25.1	-11.7	11.3	8.6	-29.7	-1.0	.7	2.0
1937	8.1	34.5	25.1	-19.6	17.5	14.7	26.0	2.4	5.0	3.2
1938	10.6	18.3	12.3	-16.7	.5	9.3	-73.2	1.7	2.0	3.5
1939	9.3	23.7	28.7	-20.4	4.7	8.4	-38.0	*	6.3	4.1
1940	7.5	48.5	42.4	-6.6	17.7	17.4	33.8	57.1	10.4	4.8
1941	3.0	58.0	56.7	-7.6	36.3	26.3	284	81.8	23.9	8.6
1942	-12.3	53.5	60.5	-10.8	45.1	23.2	271	111	28.1	5.4
1943	-13.9	51.1	64.1	-8.5	61.3	21.9	157	71.8	55.1	9.2
1944	-11.7	44.5	62.3	-3.6	57.9	20.0	269	67.0	53.9	3.1
1945	-5.9	44.3	58.2	-2.7	15.0	21.3	354	67.4	55.4	5.3
1946	8.6	51.2	48.6	-.6	21.6	17.8	147	38.2	36.4	6.6
1947	14.4	43.9	40.6	-3.0	19.0	26.1	104	53.5	26.2	15.4
1948	20.8	49.8	50.8	-4.1	23.8	36.4	143	82.3	32.9	22.4
1949	34.3	48.1	49.0	-5.3	19.8	28.4	176	93.8	35.2	24.2
1950	39.5	65.1	49.4	-6.2	50.9	30.7	230	128	50.2	22.4
1951	39.8	64.3	50.2	-3.7	20.1	33.7	160	61.4	40.0	24.3
1952	32.0	74.5	57.8	-6.1	54.9	40.3	202	150	57.9	30.8
1953	47.3	105	60.5	-7.0	88.4	52.6	261	131	88.0	38.0
1954	86.9	75.8	67.8	-13.4	76.2	34.8	173	105	67.5	45.0
1955	131	76.5	71.7	-14.4	65.2	43.3	167	110	75.5	44.1
1956	172	75.1	62.8	-18.0	65.7	51.3	158	113	89.6	51.2
1957	198	85.8	72.8	-25.4	44.2	53.9	94	126	94.0	63.5

(million dollars; 1954 price weights except as noted)

	Tin	Gold	Silver	All metals			Preferred series, all metals except gold and silver		
				1902 prices	1929 prices	1954 prices	1902 prices	1929 prices	1954 prices
	K	L	M	N	O	P	Q	R	S
1870	6.6	-36.6	-6.5	-22.3	-18.4	-26.4	3.4	7.3	16.7
1871	10.4	-101	-11.2	-62.4	-57.4	-91.5	4.4	9.4	20.7
1872	10.6	-69.1	-16.4	-45.7	-40.3	-63.0	5.3	10.7	22.5
1873	9.0	-61.3	-17.7	-42.0	-36.7	-56.8	5.3	10.6	22.2
1874	10.2	-24.5	-15.8	-20.1	-16.2	-23.6	4.2	8.1	16.7
1875	9.0	-90.2	-12.3	-58.0	-55.1	-90.1	3.0	5.9	12.4
1876	8.5	-39.3	-12.8	-29.3	-27.9	-44.7	1.9	3.3	7.4
1877	8.9	.5	-10.7	-5.0	-3.5	-2.6	2.0	3.5	7.6
1878	11.7	6.9	-6.0	3.1	5.2	10.7	2.7	4.8	9.8
1879	12.8	1.7	-4.4	1.1	3.3	7.7	2.8	5.0	10.4
1880	25.4	130	-.9	85.2	91.8	160	8.7	15.3	30.5
1881	15.3	165	-4.7	100	104	180	5.6	9.3	19.8
1882	16.6	3.0	-6.5	3.9	8.3	18.5	6.2	10.6	22.0
1883	21.3	10.3	-7.4	6.8	10.3	21.9	5.3	8.8	19.0
1884	20.7	-31.0	-8.8	-21.9	-20.8	-31.0	1.9	3.0	8.8
1885	19.2	30.8	-13.8	10.5	10.8	22.1	.9	1.2	5.1
1886	22.4	-37.6	-9.9	-22.6	-18.5	-24.8	5.8	9.9	22.7
1887	23.6	56.2	-7.8	34.9	39.1	72.9	6.6	10.8	24.5
1888	25.3	43.3	-11.4	21.4	23.1	44.1	2.9	4.6	12.2
1889	27.1	-84.1	-16.3	-55.8	-53.2	-83.9	4.1	6.7	16.5
1890	27.9	-7.3	-11.1	-2.9	3.2	13.7	8.3	14.4	32.1
1891	31.9	-115	-3.9	-67.3	-64.7	-102	3.2	5.8	17.3
1892	35.1	-.8	-12.5	-2.3	2.4	13.5	6.0	10.7	26.8
1893	49.0	-148	-19.0	-96.2	-94.2	-148	3.2	5.2	18.7
1894	13.4	-7.6	-49.4	-42.0	-47.0	-72.2	-6.7	-11.7	-15.2
1895	38.1	-51.0	-34.8	-46.0	-39.9	-52.8	5.8	11.9	33.0
1896	40.0	-134	-39.6	-111	-118	-190	-7.5	-14.2	-16.5
1897	40.3	75.7	-43.9	9.9	3.5	16.8	-7.3	-13.7	15.0
1898	51.1	178	-34.8	78.0	72.9	134.8	-5.3	-10.4	8.4
1899	53.9	87.0	-36.0	32.5	34.7	71.2	3.6	5.8	20.2
1900	54.1	-6.3	-29.4	-24.2	-26.8	-33.5	-2.2	-4.8	2.2
1901	58.2	21.8	-39.7	3.6	15.1	42.0	15.5	27.0	59.9
1902	63.9	5.9	-34.6	-12.9	-8.6	5.4	5.3	9.6	34.1
1903	70.5	-3.6	-31.5	-11.1	-2.9	14.5	10.7	18.9	49.6
1904	66.5	29.8	-32.0	-13.0	-21.5	-24.0	-10.7	-19.2	-21.8
1905	72.8	-65.9	-29.8	-59.5	-61.9	-85.3	-2.0	-4.4	10.4
1906	77.7	97.5	-27.0	47.7	52.7	110	7.0	12.0	39.2
1907	66.0	107	-17.8	52.6	51.7	104	.6	-.3	15.2
1908	63.0	128	-21.1	46.7	32.8	68.1	-16.1	-30.0	-38.8
1909	78.2	-80.4	-19.1	-61.0	-65.1	-90.9	-1.6	-5.7	8.6
1910	85.6	-127	-15.8	-83.4	-84.3	-120	1.7	.8	22.9
1911	83.5	86.5	-29.6	20.8	13.0	27.8	-11.9	-19.7	-29.1
1912	93.3	-14.2	-24.5	-22.6	-24.8	-16.1	1.1	-1.1	22.6
1913	82.8	-14.6	-42.2	-47.9	-62.0	-80.2	-13.0	-27.1	-23.4
1914	78.6	-77.0	-37.2	-91.6	-101	-180	-22.9	-32.4	-66.2
1915	92.0	42.8	-36.3	-2.2	-9.7	6	-4.9	-12.4	*
1916	114	898	-48.4	508	510	905	8.1	9.9	55
1917	118	306	-31.2	149	137	280	-12.5	-23.8	5
1918	129	35.6	-156	-48.3	-27.6	42	28.2	48.9	162
1919	82.8	-494	-113	-345	-330	-496	16.9	32.0	111
1920	125	161	-21.3	113	139	282	31.6	57.5	142
1921	65.6	1130	15.7	679	679	1173	2.1	2.1	28
1922	125	403	10.0	269	287	517	24.0	42.2	104
1923	137	498	2.6	332	361	648	36.3	65.5	148
1924	121	437	-45.6	244	255	466	14.8	25.5	75
1925	144	-227	-42.3	-147	-138	-197	13.7	23.0	72
1926	147	166	-30.9	116	146	298	37.5	67.9	162
1927	137	10.3	-30.8	10.1	26.8	89	23.2	39.9	109
1928	149	-663	-28.0	-380	-358	-559	29.3	51.2	132
1929	165	296	-31.0	218	267	521	62.9	111	256
1930	124	474	-25.2	321	364	670	56.8	99.7	221
1931	106	246	6.4	196	232	425	46.3	82.7	172
1932	76.9	-755	17.5	-403	-377	-623	31.8	58.0	115
1933	115	-294	100	-77.6	-51.6	-68	33.4	59.4	125
1934	99.5	1134	152	781	799	1374	16.7	34.7	88
1935	105	1739	442	1330	1358	2312	27.9	55.2	131
1936	129	1117	320	893	928	1613	34.2	68.6	176
1937	137	1586	150	1065	1108	1990	34.8	77.4	254
1938	90.7	1974	437	1439	1453	2470	0.7	15.1	59
1939	125	3574	152	2229	2265	3878	23.2	58.9	152
1940	136	4744	133	2968	3039	5246	83.5	155	369
1941	194	982	100	838	1000	1847	196	358	765
1942	106	316	86.1	402	548	1083	162	307	681
1943	87.1	69.0	-5.3	166	270	620	129	232	556
1944	112	-845	-195	-451	-318	-366	170	303	674
1945	105	-106	-104	68.1	221	507	196	349	717
1946	103	311	22.4	323	413	812	125	215	478
1947	112	1866	44.4	1246	1331	2362	116	201	452
1948	113	1680	66.8	1180	1288	2318	146	254	571
1949	89.0	686	59.4	595	711	1338	152	269	592
1950	134	-372	119	53.8	209	541	199	354	794
1951	107	-550	90.2	-111	.1	137	158	268	597
1952	85.4	684	62.5	634	780	1526	191	337	780
1953	102	2.0	86.4	297	468	1055	242	413	967
1954	102	16.0	74.7	256	401	911	200	345	821
1955	113	97.0	62.3	313	468	1042	217	372	883
1956	114	106	115	366	527	1156	232	393	935
1957	103	104	138	369	525	1152	222	378	910

(Turn page for Sources and Notes)

MC-12. METALS: Net Imports (Continued)

MC-12, SOURCES

COL. A, Iron (ore). Table MC-15, Col. C, times $6.9/long ton (1954 average value of mine shipments of ore, *1954 Census Mineral Industries*, p. 10B-2).

COL. B, Manganese. Table MC-17, Col. A, times $33.8/short ton (1954 average value of imports, *Min. Yearbook 1955*, Vol. I, p. 759).

COL. C, Nickel. Table MC-18, Col. C, times $556/short ton (U.S. Bureau of the Census, *U.S. Imports of Merchandise for Consumption*, Report No. FT 110, p. 109, class 6540000, value of imports of ore and matte divided by nickel content).

COL. D, Molybdenum. Table MC-19, Col. C, times $1/lb. (1954 average value of molybdenum content of concentrates produced, *Min. Yearbook 1954*, Vol. I, p. 839).

COL. E, Tungsten. $3.15/lb. of tungsten content (value and content of total imports of ore and concentrates for consumption, *Min. Yearbook 1594*, Vol. I, p. 1234) times net imports:

1912-22. *Hist. Stat. 1960*, series M-216 (gross weight multiplied by .80 to convert to tungsten content).
1923-24. *Min. Resources 1925*, Part I, p. 614.
1925-56. *Hist. Stat. 1960*, series M-216.
1957. *Min. Yearbook 1959*, Vol. I, p. 1119.

COL. F, Chromium. Table MC-20, Col. D, times $63/long ton of Cr_2O_3 (1954 average value of content of imports of chromite, *Min. Yearbook 1954*, Vol. I, p. 313).

COL. G, Copper. Table MC-21, Col. G, times $492/short ton (1954: value of mine output (*1954 Census of Mineral Industries*, p. 10D-3) divided by output, Table MO-13, Col. B).

COL. H, Lead. Table MC-23, Col. I, times $240/short ton (1954: value of output (*1954 Census*, p. 10E-4) divided by output, Table MO-14, Col. D).

COL. I, Zinc. Table MC-25, Col. F, times $135/short ton (1954: value of output (*1954 Census*, p. 10E-4) divided by output, Table MO-15, Col. H).

COL. J, Bauxite. Table MC-27, Col. C, times $9.07/long ton (1954 average value of shipments, *1954 Census*, p. 10H-1).

COL. K, Tin. Table MC-30, Col. H, times $1,885/long ton (1954 average value of imports, *Min. Yearbook 1954*, Vol. I, p. 1180).

COL. L, Gold

1870-1952. *Hist. Stat. 1949*, series M-47, net *imports* in dollars, times 1.693 for 1870-1933 (1954 price divided by old price: $35.00/$20.67).
1953-55. *Stat. Abstract 1957*, Table 1124.
1956-57. *Stat. Abstract 1958*, p. 879.

COL. M, Silver. .85 (1954 New York price) times *Hist. Stat 1949*, series M-50, net imports in dollars, divided by average New York price for each year as given for:

1870-79. *Stat. Abstract 1921*, p. 619 (New York price extrapolated by London price).
1880-1924. *Stat. Abstract 1925*, p. 715.
1925-47. *Stat. Abstract 1949*, p. 780.
1948-50. *Stat. Abstract 1952*, p. 391.
1951-55. *Stat. Absract 1957*, p. 720.
1956-57. *Stat. Abstract 1958*, p. 713.

COLS. N and O, All metals, net imports, 1902 and 1929 prices. Computed exactly as Col. P, except that 1902 and 1929 price weights were used. (For weights, see notes, below.)

COL. P, All metals, 1954-weighted import index. Sum of Cols. A through M.

COLS. Q and R, Preferred series, all metals except gold and silver, 1902 and 1929 prices. Computed exactly as Col. S, except that 1902 and 1929 price weights were used in the computation. (For weights, see notes, below.)

COL. S, Preferred series, all metals except gold and silver, 1954-weighted import index. Sum of Cols. A through K.

MC-12, NOTES

* Less than $50,000.
( ) Interpolation.

Col. B. Manganese price weight used was the average value of imports rather than the average value of output, as used in the computation of the metals output index (Table MO-7). Output was generally smaller and more erratic than imports. Moreover, the 1954 value was dominated by government subsidy. For these reasons it appeared better to use the import value rather than the output value for the imports and consumption indexes.

Cols. L and M. Gold and silver price weights. The factors used here are those of the refined metals and are inconsistent with the weights used in Table MO-7, Metals Output. The weights used in computing aggregate metals output were based on the value of output of mines principally engaged in producing gold and silver, and they consisted of the quotient of total value of output of such mines divided by our index of output of the metal. This produces a "price" per ounce which is considerably less than the market value of the metal, because much of the output, particularly in the case of silver, is produced by mines which are principally engaged in producing other metals, such as lead, zinc, copper, and gold.

Cols. N, O, Q, and R. The price weights used in the computation of these indexes are as follows:

	Commodity	*1902 price weights*	*1929 price weights*
A	Iron	$1.84/long ton	$2.70/long ton
B	Manganese	7.3/short ton	11.4/short ton
C	Nickel	83/ short ton	146/short ton
D	Molybdenum	1.00/lb.	.58/lb.
E	Tungsten	.20/lb.	.285/lb.
F	Chromium	17/long ton of Cr_2O_3	17/long ton of Cr_2O_3
G	Copper	155/short ton	284/short ton
H	Lead	37/short ton	101/short ton
I	Zinc	48/short ton	62/short ton
J	Bauxite	5.0/long ton	6.5/long ton
K	Tin	550/long ton	924/long ton
L	Gold	20.67/oz.	20.67/oz.
M	Silver	.53/oz.	.53/oz.

MC-13. METALS: Consumption

	Iron	Manganese	Nickel	Molybdenum	Copper	Lead	Zinc	Bauxite	Tin
	A	B	C	D	E	F	G	H	I
1870	(22)	(.1)			5	15	1		7
1871	(23)	(.1)			5	18	1		10
1872	(34)	(.2)			8	19	1		11
1873	(34)	(.2)			11	22	3		9
1874	(32)	(.2)			10	21	2		10
1875	(27)	(.1)			8	20	3		9
1876	(25)	(.1)			7	19	3		8
1877	(28)	(.1)			8	22	3		9
1878	(31)	(.2)			9	24	3		12
1879	(37)	(.2)			8	24	4		13
1880	51	.3			15	25	5		25
1881	53	.2			16	30	6		15
1882	65	.2	.1		21	34	7		17
1883	60	.3	.1		21	37	8		21
1884	59	.4	.1		19	35	7		21
1885	54	.9	*		23	33	8		19
1886	74	1.2	.1		29	36	8		22
1887	84	1.4	.2		35	38	10		24
1888	85	1.1	.1		38	38	10		25
1889	99	1.1	.2		38	40	10	*	27
1890	112	2.0	.3		55	38	11	*	28
1891	107	1.9	(.3)		43	45	13	*	32
1892	110	2.7	.3		63	46	15	.1	35
1893	80	2.9	.7		37	42	14	.1	49
1894	80	1.9	.2		49	48	13	.1	13
1895	119	3.6	.8		63	61	15	.2	38
1896	109	1.6	.7		48	54	12	.2	40
1897	120	4.9	.5		58	55	15	.2	40
1898	143	5.0	1.9		74	57	18	.2	51
1899	176	7.5	1.2		101	57	19	.3	54
1900	184	10.1	1.8		88	68	15	.2	54
1901	203	6.7	5.1		94	68	20	.2	58
1902	248	9.2	8.6		136	84	21	.2	64
1903	236	5.6	9.5		129	76	24	.4	70
1904	208	4.3	3.6		118	81	27	.5	67
1905	299	9.9	6.2		138	87	32	.5	73
1906	341	8.7	6.8		169	95	27	.6	78
1907	358	8.1	3.0		120	98	34	.9	66
1908	224	7.0	2.2		118	80	29	.5	63
1909	359	8.1	3.2		174	93	43	1.2	78
1910	381	9.3	5.2		184	95	43	1.4	86
1911	291	6.8	2.0		175	97	42	1.4	84
1912	400	11.5	6.4		202	98	51	1.5	93
1913	423	13.2	5.9		200	106	54	1.9	83
1914	280	10.8	2.8		173	114	46	2.0	79
1915	381	13	9	.2	279	106	66	3	92
1916	497	23	12	.2	363	116	85	4	114
1917	482	29	16	.3	343	130	75	5	118
1918	487	30	16	.9	409	137	74	5	129
1919	383	15	9	.3	225	109	56	3	83
1920	453	26	13	*	259	136	70	5	125
1921	201	15	1	*	150	112	36	1	66
1922	327	17	1	.2	220	124	58	3	126
1923	493	17	10	*	320	144	74	5	137
1924	372	21	8	.3	333	152	75	4	121
1925	444	27	9	.8	345	164	75	5	144
1926	472	33	11	.9	386	180	86	5	147
1927	444	25	10	1	350	166	84	5	137
1928	458	18	17	2	395	168	87	6	149
1929	519	27	23	2	437	174	94	6	165
1930	382	25	14	2	311	137	81	6	124
1931	210	21	8	1	222	95	54	4	106
1932	91	5	5	1	128	66	37	2	77
1933	150	7	12	1	167	75	52	3	115
1934	183	14	11	3	159	80	59	2	100
1935	245	16	18	3	217	93	71	3	105
1936	357	32	25	6	322	117	78	5	129
1937	433	36	26	10	342	132	90	7	137
1938	224	19	12	9	200	96	72	6	91
1939	368	25	29	12	351	120	85	8	126
1940	554	50	43	19	496	192	100	9	136
1941	651	61	51	31	807	233	125	16	194
1942	718	60	53	56	790	266	132	23	106
1943	693	58	56	45	738	204	156	43	87
1944	689	53	54	36	739	194	151	31	112
1945	609	50	53	30	696	182	138	22	105
1946	498	56	44	16	684	130	114	17	103
1947	663	48	45	19	632	178	112	23	112
1948	693	54	52	26	597	178	118	25	113
1949	615	52	38	18	527	138	115	24	89
1950	736	70	56	38	711	212	134	30	134
1951	792	68	48	34	641	163	132	36	107
1952	694	78	56	37	669	188	148	38	85
1953	842	111	59	47	705	188	162	51	102
1954	650	83	53	51	608	183	131	58	103
1955	862	86	61	50	657	194	145	63	113
1956	864	87	71	39	673	178	163	70	114
1957	893	98	68	32	615	168	166	69	103

(million dollars; 1954 price weights except as noted)

	Gold	Silver	All metals except gold and silver			Preferred series, all metals, consumption		
			1902 weights	1929 weights	1954 weights	1902 weights	1929 weights	1954 weights
	J	K	L	M	N	O	P	Q
1870			12	22	50	16	26	57
1871			14	25	57	18	30	65
1872			18	32	73	24	38	83
1873			20	34	79	26	40	90
1874			19	34	75	25	40	86
1875			17	30	67	22	36	76
1876			15	27	62	20	32	71
1877			17	30	70	23	36	80
1878			19	35	79	25	41	90
1879			21	37	86	28	44	98
1880	15	2	31	54	121	41	64	138
1881	15	2	30	52	120	40	62	137
1882	15	4	37	62	144	49	74	163
1883	23	4	37	64	147	53	80	174
1884	21	3	36	62	141	51	77	165
1885	16	3	35	61	138	47	73	157
1886	19	3	44	76	170	57	89	192
1887	19	3	50	86	193	63	99	215
1888	21	5	52	88	197	67	103	223
1889	20	5	56	96	215	71	111	240
1890	22	5	65	112	246	81	128	273
1891	22	6	63	109	242	79	125	270
1892	23	6	72	123	272	88	139	301
1893	19	5	59	100	226	73	114	250
1894	15	6	53	93	205	66	106	226
1895	19	7	78	135	301	94	151	327
1896	16	6	69	120	265	83	134	287
1897	17	7	77	132	294	91	146	318
1898	20	7	93	158	350	109	174	377
1899	27	9	112	190	416	134	212	452
1900	29	10	111	189	421	134	212	460
1901	32	11	121	204	455	147	230	498
1902	36	14	151	257	571	181	287	621
1903	38	14	147	250	550	179	282	602
1904	35	15	136	232	509	166	262	559
1905	43	16	173	289	646	208	324	705
1906	54	15	194	325	726	236	367	795
1907	53	19	182	302	688	225	345	760
1908	41	17	140	237	524	175	272	582
1909	51	18	206	342	759	247	383	828
1910	58	20	218	363	805	264	409	883
1911	56	22	189	319	699	236	366	777
1912	61	19	235	390	863	283	438	943
1913	63	20	240	398	887	290	448	970
1914	39	19	189	323	708	224	358	766
1915	40	20	263	437	949	298	472	1009
1916	51	19	337	562	1214	379	604	1284
1917	53	14	330	551	1198	370	591	1265
1918	55	23	357	600	1288	404	647	1366
1919	93	22	241	402	883	310	471	998
1920	85	16	295	493	1087	355	553	1188
1921	35	25	154	268	582	189	303	642
1922	54	27	238	404	876	287	453	957
1923	60	24	328	551	1200	379	602	1284
1924	55	21	298	506	1086	343	551	1162
1925	53	25	332	564	1214	379	611	1292
1926	52	25	362	613	1321	409	660	1398
1927	45	24	334	568	1222	375	609	1291
1928	45	21	359	605	1300	398	644	1366
1929	42	26	399	672	1447	441	714	1515
1930	26	23	298	501	1082	327	530	1131
1931	10	21	200	340	721	219	359	752
1932	-11	12	114	197	412	116	199	413
1933	-10	9	161	275	582	161	275	581
1934	-62	10	170	285	611	140	255	559
1935	-32	5	214	358	771	198	342	744
1936	-3	16	300	500	1071	308	508	1084
1937	3	24	341	559	1213	358	576	1240
1938	*	17	208	339	729	219	350	746
1939	7	38	320	526	1124	348	554	1169
1940	13	38	449	742	1599	481	774	1650
1941	37	62	625	1033	2169	686	1094	2268
1942	47	86	649	1044	2204	731	1126	2337
1943	86	100	620	989	2080	734	1103	2266
1944	97	102	606	977	2059	727	1098	2258
1945	109	107	550	894	1885	681	1025	2101
1946	154	74	484	798	1662	621	935	1890
1947	49	84	525	861	1832	607	943	1965
1948	45	89	534	864	1856	617	947	1990
1949	109	75	467	755	1616	578	866	1800
1950	98	94	618	997	2121	735	1114	2313
1951	69	89	592	944	2021	689	1041	2179
1952	96	82	585	935	1993	693	1043	2171
1953	75	90	671	1055	2267	771	1155	2432
1954	44	73	577	903	1920	649	975	2037
1955	46	86	664	1037	2231	745	1118	2363
1956	49	85	668	1051	2259	750	1133	2393
1957	51	81	648	1019	2212	729	1100	2344

(Turn page for Sources and Notes)

MC-13. METALS: Consumption (Continued)

MC-13, SOURCES

Computation of Index in 1954 Prices:

COL. A, Iron (ore). Table MC-15, Col. H, times $6.9/long ton (1954 average value of mine shipments of ore, *1954 Census of Mineral Industries*, p. 10B-2). 1870-79 extrapolated by pig iron production.

COL. B, Manganese. Table MC-17, Col. B, times $33.8/short ton (1954 average value of imports, *Min. Yearbook 1955*, Vol. I, p. 759). 1870-79 extrapolated by pig iron production.

COL. C, Nickel. Table MC-18, Col. F, times $556/short ton (see source for Table MC-12).

COL. D, Molybdenum. Table MC-19, Col. E, times $1/lb. (1954 average value of molybdenum content of concentrates produced, *Min. Yearbook 1954*, Vol. I, p. 839).

COL. E, Copper. Table MC-22, Col. H, times $492/short ton (1954: value of mine output (*1954 Census of Mineral Industries*, p. 10D-3) divided by output, Table MO-13, Col. B).

COL. F, Lead. Table MC-24, Col. H, times $240/short ton (1954: value of output (*1954 Census*, p. 10E-4) divided by output, Table MO-14, Col. D).

COL. G, Zinc. Table MC-26, Col. F, times $135/short ton (1954: value of output (*1954 Census*, p. 10E-4) divided by output, Table MO-15, Col. H).

COL. H, Bauxite

1870-88. Negligible.
1889-1914. Table MC-27, Col. D, times $9.07/long ton.
1915-57. Table MC-27, Col. H, times $9.07/long ton (1954 average value of shipments, *1954 Census*, p. 10H-1).

COL. I, Tin. Table MC-30, Col. H, times $1,885/long ton (1954 average value of imports, *Min. Yearbook 1954*, Vol. I, p. 1180).

COL. J, Gold

1870-79. Data not available.
1880-1900. Director of the Mint, *Annual Report*, 1913, p. 264, "Net Industrial Consumption," times 1.693 (1954 price divided by old price: $35.00/$20.67).
1901-33. *Min. Yearbook 1941*, p. 61, times 1.693.
1934-41. *Min. Yearbook 1941*, p. 61.
1942-45. *Min. Yearbook 1945*, p. 87.
1946-49. *Min. Yearbook 1949*, p. 574.
1950-54. *Min. Yearbook 1954*, Vol. I, p. 515.
1955-57. *Min. Yearbook 1957*, Vol. I, p. 540, times $35/fine oz.

COL. K, Silver

1870-79. Data not available.
1880-1950. Same sources as gold, multiplied by weight of $.85/fine oz. (New York price 1954, from *Stat. Abstract 1957*, p. 720. See note to Table MC-12.)
1951-54. *Min. Yearbook 1954*, Vol. I, p. 1043, times $.85/fine oz.
1955-57. *Min. Yearbook 1957*, Vol. I, p. 1028, times $.85/fine oz.

COLS. L and M, All metals except gold and silver, 1902 and 1929 price weights. Computed exactly as Col. N, except that 1902 and 1929 price weights were used. (For weights, see notes below.)

COL. N, All metals except gold and silver, 1954 price weights. Sum, Cols. A through I.

COLS. O and P, Preferred series, all metals, consumption, 1902 and 1929 price weights. Computed exactly as Col. Q, except that 1902 and 1929 price weights were used. (For weights, see notes, below.)

COL. Q, Preferred series, all metals, consumption, 1954 price weights. Sum, Cols. A through K (linked for missing series in earlier years).

MC-13, NOTES

* Under $50,000.
( ) Extrapolation or interpolation.

It should be noted that this table differs from that on metals output not only by including some different minor metals, but in employing different price-weights for manganese, gold and silver (import prices instead of mine value of ores and concentrates). See notes to Table MC-12. This series represents our preferred measure of metals consumption. For comparison purposes, we have provided a different measure in the following table (MC-14) in which consumption estimates have been weighted by ingot prices.

Cols. L, M, O, and P. The prices used in the computation of the 1902- and 1929-weighted indexes are as follows:

	Commodity	*1902 price weights*	*1929 price weights*
A	Iron	$1.84/long ton	$2.70/long ton
B	Manganese	7.3/short ton	11.4/short ton
C	Nickel	83/short ton	146/short ton
D	Molybdenum	1.0/lb.	.58/lb.
E	Copper	155/short ton	284/short ton
F	Lead	37/short ton	101/short ton
G	Zinc	48/short ton	62/short ton
H	Bauxite	5.0/long ton	6.5/long ton
I	Tin	550/ long ton	924/long ton
J	Gold	20.67/oz.	20.67/oz.
K	Silver	.53/oz.	.53/oz.

MC-14. METALS: Consumption (Alternative Measure)

(million dollars, 1954 ingot price weights)

	Iron ore	Manganese	Nickel	Molybdenum	Copper	Lead	Zinc	Bauxite	Tin	Gold	Silver	Metals, consumption	
												Except gold & silver	Total
	A	B	C	D	E	F	G	H	I	J	K	L	M
1870	167				6	18	2		8			201	209
1871	167				6	21	2		11			207	215
1872	253				10	22	2		12			299	310
1873	253				13	26	5		10			307	319
1874	239				12	25	3		11			290	301
1875	195				10	23	5		10			243	252
1876	181				8	22	5		9			225	233
1877	203				10	26	5		10			254	264
1878	224				11	28	5		13			281	292
1879	268				10	28	6		14			326	338
1880	369	1			18	29	8		27	15	2	452	469
1881	384	1			19	35	10		16	15	2	465	482
1882	471	1	.2		25	40	11		19	15	4	567	586
1883	434	1	.2		25	43	13		23	23	4	539	566
1884	427	1	.2		23	41	11		23	21	3	526	550
1885	391	3			28	39	13		21	16	3	495	514
1886	536	4	.2		35	42	13		24	19	3	654	676
1887	608	5	.4		42	44	16		26	19	3	741	763
1888	615	4	.2		46	44	16		27	21	5	752	778
1889	717	4	.4		46	47	16	.1	29	20	5	859	884
1890	811	7	.7		66	44	17	.2	31	22	5	977	1004
1891	775	7	.7		52	53	21	.3	35	22	6	944	972
1892	796	10	.7		76	54	24	.9	38	23	6	1000	1029
1893	579	10	2		44	49	22	.8	53	19	5	760	784
1894	579	7	.4		59	56	21	.9	14	15	6	737	758
1895	862	13	2		76	71	24	1	41	19	7	1090	1116
1896	789	6	2		58	63	19	2	44	16	6	983	1005
1897	869	18	1		70	64	24	2	44	17	7	1092	1116
1898	1035	18	4		89	67	29	2	56	20	7	1300	1327
1899	1274	27	3		121	67	30	3	59	27	9	1584	1620
1900	1332	37	4		106	80	24	2	59	29	10	1644	1683
1901	1470	24	11		113	80	32	2	63	32	11	1795	1838
1902	1796	33	19		163	98	33	2	70	36	14	2214	2264
1903	1709	21	21		155	89	38	4	76	38	14	2113	2165
1904	1506	15	8		142	95	43	4	73	35	15	1886	1936
1905	2165	36	14		166	102	51	5	80	43	16	2619	2678
1906	2469	31	15		203	111	43	6	85	54	15	2963	3032
1907	2592	30	7		144	115	54	8	72	53	19	3022	3094
1908	1622	25	5		142	94	46	4	69	41	17	2007	2065
1909	2599	30	7		209	109	68	11	85	51	18	3118	3187
1910	2758	34	12		221	111	68	13	94	58	20	3311	3389
1911	2107	25	4		210	114	67	13	92	56	22	2632	2710
1912	2896	42	14		242	115	81	14	101	61	19	3505	3585
1913	3063	48	13		240	124	86	18	91	63	20	3683	3766
1914	2027	39	6		208	133	73	19	86	39	19	2591	2649
1915	2758	46	20	.5	335	124	105	25	100	40	20	3513	3573
1916	3598	83	27	.5	436	136	135	35	124	51	19	4574	4644
1917	3490	105	36	1	412	152	119	47	129	53	14	4491	4558
1918	3526	110	36	2	491	160	117	50	141	55	23	4633	4711
1919	2773	54	20	1	270	128	89	31	91	93	22	3457	3572
1920	3280	96	29	*	311	159	111	46	136	85	16	4168	4269
1921	1455	56	2	*	180	131	57	14	72	35	25	1967	2027
1922	2367	60	2	.2	264	145	92	27	137	54	27	3094	3175
1923	3569	62	22	*	384	169	117	48	149	60	24	4520	4604
1924	2693	77	18	1	400	178	119	40	132	55	21	3658	3734
1925	3215	98	20	2	414	192	119	51	157	53	25	4268	4346
1926	3417	120	25	2	463	211	136	50	160	52	25	4584	4661
1927	3215	92	22	5	420	194	133	48	149	45	24	4278	4347
1928	3316	65	38	6	474	197	138	52	163	45	21	4449	4515
1929	3758	100	51	7	524	204	149	52	180	42	26	5025	5093
1930	2766	90	31	10	373	160	128	54	135	26	23	3747	3796
1931	1520	75	18	6	266	111	86	35	116	10	21	2233	2264
1932	659	18	11	4	154	77	59	23	84	-11	12	1089	1090
1933	1086	24	27	8	200	88	82	24	125	-10	9	1664	1663
1934	1325	51	25	14	191	94	94	23	109	-62	10	1926	1874
1935	1774	57	40	17	260	109	113	29	115	-32	5	2514	2487
1936	2585	116	56	29	386	137	124	51	141	-3	16	3625	3638
1937	3135	131	58	48	410	155	143	67	149	3	24	4296	4323
1938	1622	70	27	43	240	112	114	59	99	*	17	2386	2403
1939	2664	90	65	54	421	141	135	71	137	7	38	3778	3823
1940	4011	182	96	53	595	225	158	83	148	13	38	5551	5602
1941	4713	222	114	83	968	273	198	147	212	37	62	6930	7029
1942	5198	218	118	146	948	311	209	215	116	47	86	7479	7612
1943	5017	211	125	120	886	239	247	407	95	86	100	7347	7533
1944	4988	192	120	91	887	227	239	296	122	97	102	7162	7361
1945	4409	184	118	76	835	213	219	208	115	109	107	6377	6593
1946	3606	204	98	40	821	152	181	162	112	154	74	5376	5604
1947	4800	176	100	49	758	208	178	219	122	49	84	6610	6743
1948	5017	197	116	66	716	208	187	233	123	45	89	6863	6997
1949	4453	191	85	49	632	162	182	229	97	109	75	6080	6264
1950	5329	253	125	100	853	248	212	284	146	98	94	7550	7742
1951	5734	247	107	86	769	191	209	337	117	69	89	7797	7955
1952	5025	285	125	96	803	220	235	361	93	96	82	7243	7421
1953	6096	403	132	121	846	220	257	481	111	75	90	8667	8832
1954	4706	301	118	138	730	214	208	550	112	44	73	7077	7194
1955	6241	314	136	138	788	227	230	598	123	46	86	8795	8927
1956	6255	316	158	115	808	208	258	663	124	49	85	8905	9039
1957	6465	357	152	107	738	197	263	653	112	51	81	9044	9176

MC-14, SOURCES

1954 Ingot Price Weights:

COL. A, Iron (ore), Table MC-13, Col. A, times 7.24 (1954: price of pig iron per long ton (*Min. Yearbook 1955*, Vol. I, p. 590) divided by ore price).

COL. B, Manganese. Table MC-17, Col. B, times $123/ton. This is 1954 producers' average price for ferromanganese (*Min. Yearbook 1955*, Vol. I, p. 757), divided by .75 because ferromanganese is 75% manganese; and multiplied by .47 because imports (the principal source of Mn consumed, given in Table MC-17) generally averaged 46% to 49% manganese.

COL. C, Nickel. Table MC-13, Col. C, times 2.23 (1954: average price per pound of nickel (*Min. Yearbook 1955*, Vol. I, p. 841) divided by Table MC-13 nickel factor).

COL. D., Molybdenum. Table MC-13, Col. D, times 1.2 (approximate average ratio of prices of molybdic oxide and ferromolybdenum to price of molybdenum concentrates (*Min. Yearbook 1953*, Vol. I, p. 824, and *Min. Yearbook 1954*, Vol. I, p. 843)).

COL. E, Copper. Table MC-13, Col. E times 1.20 (1954: price of copper (*Min. Yearbook 1955*, Vol. I, p. 388) divided by ore price).

COL. F, Lead. Table MC-13, Col. F, times 1.171 (1954: New York average lead price (*Min. Yearbook 1955*, Vol. I, p. 643) divided by Table MC-13 lead factor).

COL. G, Zinc. Table MC-13, Col. G, times 1.585 (1954: East St. Louis price of zinc, Prime Western grade (*Min. Yearbook 1955*, Vol. I, p. 1266), divided by Table MC-13 zinc factor).

COL. H, Bauxite

1870-88. Negligible.

1889-1914. Table MC-27, Col. D, times $85.5.

1915-57. Table MC-27, Col. H, times $85.5 (1954 average aluminum ingot price (*Min. Yearbook 1955*, Vol. I, p. 141) divided by ratio of units of bauxite required to produce one unit of aluminum).

COL. I, Tin. Table MC-13, Col. I, times 1.091 (1954 average monthly price of Straits tin at New York (*Min. Yearbook 1955*, Vol. I, p. 1134) divided by Table MC-13 tin factor).

COL. J, Gold. Table MC-13, Col. J, transcribed.

COL. K, Silver. Table MC-13, Col. K, transcribed.

COL. L, Total, all metals except gold and silver. Sum, Cols. A through I.

COL. M, Total, all metals. Cols. A through K (linking factors used for 1870-79 to allow for missing gold and silver data).

MC-14, NOTES

* Less than $50,000.

The ferroalloys are weighted by the prices of the form in which they are generally used, which is metallic form for nickel only.

This series, which uses ingot prices as weights, is an alternative measure of metals consumption to that in Table MC-13, which uses ore prices. Although there is considerable difference in the relative importance of the components (iron ore is one-third of the total in MC-13 and two-thirds of the total in MC-14), the over-all trends are quite similar.

MC-15. IRON (ORE): Imports and Consumption

(million long tons)

	Imports	Exports	Net imports	Production	Apparent consumption (Col. C plus Col. D)	Bu. Mines, apparent or actual consumption	Col. F / Col. E	Preferred series, consumption
	A	B	C	D	E	F	G	H
1872	.024		.024					
1873	.046		.046					
1874	.058		.058					
1875	.057		.057	4.02	4.08			4.0
1876	.017		.017					
1877	.031		.031					
1878	.028		.028					
1879	.28		.28					
1880	.49		.49	7.1	7.6			7.4
1881	.78		.78	7.1	7.9			7.7
1882	.59		.59	9.0	9.6			9.4
1883	.49		.49	8.4	8.9			8.7
1884	.49		.49	8.2	8.7			8.5
1885	.39		.39	7.6	8.0			7.8
1886	1.04		1.04	10.0	11.0			10.7
1887	1.19		1.19	11.3	12.5			12.2
1888	.59		.59	12.1	12.6			12.3
1889	.85		.85	14.5	15.4	14.4	.93	14.4
1890	1.25		1.25	16.0	17.3	16.3	.94	16.3
1891	.91		.91	14.6	15.5	15.5	1.00	15.5
1892	.81		.81	16.3	17.1	16.0	.94	16.0
1893	.53		.53	11.6	12.1	11.6	.96	11.6
1894	.17		.17	11.9	12.0	11.6	.96	11.6
1895	.52		.52	16.0	16.5	17.2	1.04	17.2
1896	.68		.68	16.0	16.7	15.8	.94	15.8
1897	.49		.49	17.5	18.0	17.4	.96	17.4
1898	.19		.19	19.4	19.6	20.7	1.06	20.7
1899	.67	.041	.63	24.7	25.3	25.5	1.01	25.5
1900	.90	.051	.85	27.6	28.4	26.7	.94	26.7
1901	.97	.065	.90	28.9	29.8	29.4	.99	29.4
1902	1.16	.088	1.07	35.6	36.6	35.9	.98	35.9
1903	.98	.081	.90	35.0	35.9	34.2	.95	34.2
1904	.49	.21	.28	27.6	27.9	30.2	1.08	30.2
1905	.85	.21	.64	42.5	43.2	43.4	1.01	43.4
1906	1.06	.26	.80	47.8	48.5	49.4	1.02	49.4
1907	1.23	.28	.95	51.7	52.7	51.9	.98	51.9
1908	.78	.31	.47	36.0	36.4	32.5	.89	32.5
1909	1.69	.46	1.23	51.3	52.5	52.1	.99	52.1
1910	2.59	.75	1.84	57.0	58.8	55.2	.94	55.2
1911	1.81	.77	1.04	43.9	44.9	42.2	.94	42.2
1912	2.10	1.20	.90	55.2	56.1	58.0	1.04	58.0
1913	2.59	1.04	1.55	62.0	63.5	61.3	.96	61.3
1914	1.35	.55	.80	41.4	42.2	40.6	.96	40.6
1915	1.34	.71	.63	55.5	56.2	55.2	.98	55.2
1916	1.33	1.18	.15	75.2	75.3	72.1	.96	72.1
1917	.97	1.13	-.16	75.3	75.1	69.9	.93	69.9
1918	.79	1.26	-.47	69.7	69.2	70.6	1.02	70.6
1919	.48	1.00	-.52	61.0	60.4	55.5	.92	55.5
1920	1.27	1.14	.13	67.6	67.7	65.6	.97	65.6
1921	.32	.44	-.12	29.5	29.4	29.2	.99	29.2
1922	1.13	.60	.53	47.1	47.7	47.4	.99	47.4
1923	2.77	1.12	1.65	69.4	71.0	71.4	1.01	71.4
1924	2.05	.59	1.46	54.3	55.7	53.9	.97	53.9
1925	2.19	.63	1.56	61.9	63.5	64.4	1.01	64.4
1926	2.55	.87	1.68	67.6	69.3	68.4	.99	68.4
1927	2.62	.90	1.72	61.7	63.5	64.3	1.01	64.3
1928	2.45	1.28	1.17	62.2	63.4	66.4	1.05	66.4
1929	3.14	1.30	1.84	73.0	74.9	75.2	1.00	75.2
1930	2.77	.75	2.02	58.4	60.4	55.3	.92	55.3
1931	1.47	.44	1.03	31.1	32.2	30.5	.95	30.5
1932	.58	.083	.50	9.8	10.4	13.2	1.27	13.2
1933	.86	.15	.71	17.6	18.3	21.7	1.19	21.7
1934	1.43	.61	.82	24.6	25.4	26.5	1.04	26.5
1935	1.49	.66	.83	30.5	31.4	35.5	1.13	35.5
1936	2.23	.64	1.59	48.8	50.4	51.8	1.03	51.8
1937	2.44	1.26	1.18	72.1	73.3	62.7	.86	62.7
1938	2.12	.59	1.53	28.4	30.0	32.4	1.08	32.4
1939	2.41	1.06	1.35	51.7	53.1	53.4	1.01	53.4
1940	2.48	1.39	1.09	73.7	74.8	80.3	1.07	80.3
1941	2.32	1.91	.41	92.4	92.8	94.4	1.02	94.4
1942	.73	2.51	-1.78	105.5	103.7	104.1	1.00	104.1
1943	.40	2.42	-2.02	101.2	99.2	100.5	1.01	100.5
1944	.46	2.16	-1.70	94.1	92.4	99.9	1.08	99.9
1945	1.20	2.06	-.86	88.4	87.5	88.2	1.01	88.2
1946	2.75	1.51	1.24	70.8	72.1	72.2	1.00	72.2
1947	4.90	2.81	2.09	93.1	95.2	96.1	1.01	96.1
1948	6.11	3.08	3.03	101.0	104.0	100.5	.97	100.5
1949	7.40	2.42	4.98	84.9	89.9	89.2	.99	89.2
1950	8.23	2.55	5.68	98.0	103.7	106.6	1.03	106.6
1951	10.1	4.33	5.77	116.5	122.3	114.8	.94	114.8
1952	9.76	5.12	4.64	97.9	102.6	100.6	.98	100.6
1953	11.1	4.25	6.85	118.0	124.8	122.1	.98	122.1
1954	15.8	3.15	12.6	78.1	90.7	94.2	1.04	94.2
1955	23.5	4.52	19.0	103	122.0	125.0	1.02	125.0
1956	30.4	5.51	24.9	97.9	122.8	125.2	1.02	125.2
1957	33.7	5.00	28.7	106	134.7	129.4	.96	129.4

MC-15, SOURCES

COL. A, Imports
1872-88. *Min. Resources 1915*, Part I, p. 316.
1889-1919. *Min. Resources 1919*, Part I, pp. 635-36.
1920-54. *Stat. Abstracts.*
1955-57. *Min. Yearbook 1957*, Vol. I, p. 583.
COL. B, Exports. Same sources as Col. A.
COL. C, Net imports. Col. A minus Col. B.
COL. D, Production. Table MO-8, Col. A, transcribed.
COL. E, Apparent consumption. Col. C plus Col. D.
COL. F, *Min. Yearbooks*, iron ore sections (before 1932, *Min. Resources*). For 1889-1914, this is apparent consumption; from 1915 on, actual consumption.
COL. G, Ratio, Col. F/Col. E.
COL. H, Preferred series
1875-88. Col. E times the average of the ratios in Col. G for 1889-98 (ratio, .973).
1889-1957. Col. F, transcribed.

MC-15, NOTES

Col. A. Imports of ore are on a fiscal year basis through 1878 and on a calendar year basis for 1879 and years following. No data available prior to 1872.

Col. D. Production figures prior to 1906 include ore containing more than 5% manganese. For 1906 and years following this is excluded. The differences, according to Barger & Schurr estimates, are less than 1% for 1899-1905 (see Table MO-8).

Col. E. The figures represent apparent consumption but do not include allowances for exports, 1872-98 (for which no figures are available), nor for changes in stocks.

Col. F. Apparent consumption figures include adjustments for stocks at mines and at lower Lake ports, 1889-1910, and include production of "zinc residuum." They do not include adjustments for changes in consumer's stocks. Iron ore production figures are for production through 1910 and shipments thereafter.

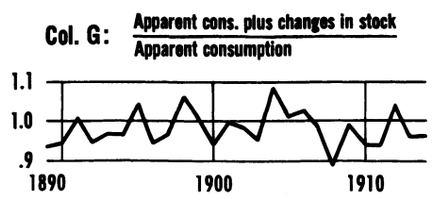
The "actual consumption" figures, as reported by the manufacturers of iron, began in 1915. These figures are slightly lower than the apparent consumption figures which run up through 1919. Partial explanations:

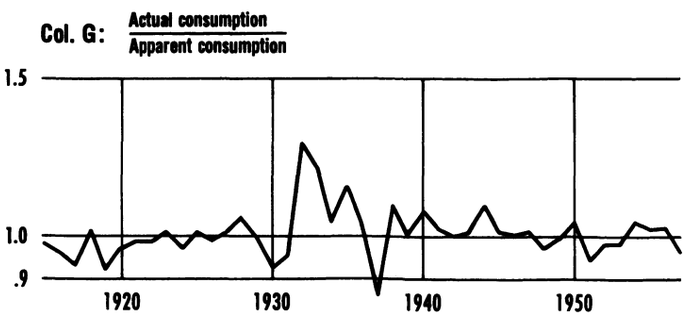
1. Inclusion of zinc residuum in apparent consumption amounting to .159, .199, .155, .147, .080 million long tons, for 1915 to 1919, respectively.

2. Inclusion in apparent consumption of "small quantities of ore not used in manufacture of pig iron, such as ore consumed in the open-hearth steel furnaces and in smelting gold, silver, and copper; but it does not include ore used in the manufacture of paint." (*Min. Resources 1919*, Part I, p. 628.)

"Actual consumption" figures are for "Iron ore, consumed in manufacture of pig iron."

Col. G. The chart for 1889-1914 represents the ratio of apparent consumption including changes in stocks to apparent consumption excluding changes in stocks. The chart for 1915-57 represents the ratio of "actual consumption" to "apparent consumption." The differences in the two series result not only from changes in stocks but from omission from the "actual consumption" series of some uses of ore. See note to Col. F.





Col. H. The apparent consumption figures through 1898 make no allowance for exports, but since these were less than one percent of production, 1899 through 1909 (and were increasing), it is assumed that the over-all trend will not be significantly affected by our use of this series as extrapolator for 1875-88.

MC-16. IRON (PIG): Consumption

(million short tons)

	Imports	Exports	Production	Actual consumption	Col. D / Col. F	Preferred series, apparent consumption
	A	B	C	D	E	F
1870	.171	.0016	1.86			2.03
1871	.199	.0039	1.91			2.11
1872	.278	.0022	2.85			3.13
1873	.241	.0031	2.87			3.11
1874	.103	.0108	2.69			2.78
1875	.059	.0177	2.27			2.31
1876	.088	.0076	2.09			2.17
1877	.077	.0036	2.31			2.38
1878	.062	.007	2.58			2.63
1879	.099	.003	3.07			3.17
1880	.846	.001	4.29			5.13
1881	.468	.004	4.64			5.10
1882	.556	.007	5.18			5.73
1883	.486	.004	5.15			5.63
1884	.317	.004	4.59			4.90
1885	.170	.006	4.53			4.69
1886	.293	.009	6.36			6.64
1887	.469	.009	7.19			7.65
1888	.365	.010	7.27			7.62
1889	.198	.015	8.52			8.70
1890	.165	.020	10.31			10.45
1891	.092	.015	9.27			9.35
1892	.093	.018	10.26			10.33
1893	.071	.022	7.98			8.03
1894	.029	.029	7.46			7.46
1895	.016	.025	10.58			10.57
1896	.099	.034	9.66			9.72
1897	.025	.189	10.81			10.65
1898	.029	.265	13.19			12.95
1899	.026	.336	15.25			14.94
1900	.068	.180	15.44			15.3
1901	.071	.091	17.78			17.8
1902	.693	.031	19.96			20.6
1903	.672	.022	20.17			20.8
1904	.090	.055	18.48			18.5
1905	.237	.055	25.75			25.9
1906	.426	.093	28.34			28.7
1907	.549	.083	28.87			29.3
1908	.103	.053	17.85			17.9
1909	.197	.069	28.89			29.0
1910	.265	.142	29.87			30.0
1911	.166	.136	26.05			26.1
1912	.144	.306	33.80			33.6
1913	.175	.311	34.04			33.9
1914	.157	.128	24.93			25.0
1915	.101	.251	33.0			32.8
1916	.151	.680	43.8			43.3
1917	.086	.735	43.2			42.6
1918	.039	.302	42.6			42.3
1919	.114	.360	33.9			33.7
1920	.208	.243	40.0			40.0
1921	.050	.031	18.0			18.0
1922	.558	.037	31.0			31.5
1923	.535	.043	43.0			43.5
1924	.310	.052	34.8			35.1
1925	.579	.045	41.2			41.7
1926	.576	.032	42.8			43.3
1927	.197	.063	39.1			39.2
1928	.218	.109	42.9			43.0
1929	.251	.060	46.5			46.7
1930	.204	.028	33.5			33.7
1931	.116	.017	19.9			20.0
1932	.164	.008	9.5			9.7
1933	.220	.012	16.1			16.3
1934	.176	.016	17.5			17.7
1935	.212	.020	23.7	23.1	.967	23.9
1936	.284	.027	34.5	33.7	.968	34.8
1937	.180	.916	39.5	38.2	.985	38.8
1938	.080	.515	20.4	20.7	1.035	20.0
1939	.130	.239	35.9	35.3	.986	35.8
1940	.046	.685	47.0	46.1	.994	46.4
1941	.029	.610	55.2	56.2	1.029	54.6
1942	.031	.150	59.1	59.0	1.000	59.0
1943	.028	.231	60.8	60.3	.995	60.6
1944	.034	.186	61.0	60.9	1.002	60.8
1945	.074	.123	53.3	53.2	.998	53.3
1946	.055	.134	45.1	45.0	1.000	45.0
1947	.232	.093	58.4	58.2	.995	58.5
1948	.319	.113	60.1	60.0	.995	60.3
1949	.175	.116	52.9	53.4	1.008	53.0
1950	.946	.380	64.6	65.0	.997	65.2
1951	1.221	.067	70.2	71.5	1.001	71.4
1952	.477	.069	61.2	61.5	.998	61.6
1953	.763	.047	74.2	74.6	.996	74.9
1954	.379	.041	57.8	58.7	1.010	58.1
1955	.386	.097	77.3	77.2	.995	77.6
1956	.514	.356	75.1	75.0	.996	75.3
1957	.545	.946	76.9	76.4	.977	76.5

MC-16, SOURCES

Col. A, Imports

1870-77. *Stat. Abstract 1878*, pp. 74 and 93.

1878-1900. *Stat. Abstract 1897*, Table 70, and *1905*, Table 108.

1901-28. *Stat. Abstract 1929*, Table 734.

1929-40. *Stat. Abstract 1942*, Table 826.

1941-55. *Stat. Abstract 1957*, Table 1059.

1956-57. *Stat. Abstract 1958*, Table 1069.

Col. B, Exports. Same sources as Col. A.

Col. C, Production. Table MO-9, Col. A, transcribed.

Col. D, Actual consumption

1935-55. *Bus. Stat. 1955*, p. 156, adjusted from monthly averages in short tons to annual data in long tons.

1956-57. *Min. Yearbook 1957*, Vol. I, p. 625.

Col. E, Ratio, Col. D/Col. F.

Col. F, Preferred series, apparent consumption. Col. A minus Col. B plus Col. C.

MC-16, NOTES

The import and export figures in Cols. A and B include certain ferroalloys. In the case of the foreign trade data for the early years, the amounts of ferroalloys included are not known.

The actual consumption figures for 1931-50 were based on reports from consumers to the Bureau of Mines. For 1951-57, the figures were compiled jointly by the Bureau of Mines and Bureau of the Census on the basis of surveys.

The foreign trade data through 1900 refer to imports and exports for years ending June 30. Production figures are for calendar years. Consequently, the apparent consumption figure for 1900 is made up of production for that year and exports and imports for half of 1900 and half of 1899. Foreign trade data for July 1-December 31, 1900, are thus not included.

MC-17. MANGANESE ORE: Imports and Consumption

(thousand tons)

	Imports for consumption	Consumption
	A	B
1870	[a]1.57	
1871	[a]1.18	
1872	[a]1.35	
1873	[a]1.15	
1874	[a] .88	
1875	[a] .23	
1876	[a] .46	
1877	[a]1.00	
1878	[a] .70	
1879	[a]2.11	
1880	[a]2.44	8.89
1881	[a]1.91	7.39
1882	[a]1.00	6.08
1883	[a]1.48	8.37
1884	[a] .67	12.1
1885	[a]1.89	27.9
1886	[a]2.04	35.8
1887	[a]1.83	40.5
1888	[a]1.32	34.0
1889	4.80	31.9
1890	38.3	59.9
1891	32.3	57.4
1892	65.6	80.8
1893	76.3	84.9
1894	50.0	57.1
1895	96.4	107
1896	35.3	46.6
1897	134	146
1898	129	147
1899	211	222
1900	287	300
1901	186	199
1902	264	272
1903	164	167
1904	122	126
1905	288	293
1906	248	256
1907	234	240
1908	200	207
1909	238	240
1910	271	274
1911	198	201
1912	337	339
1913	387	392
1914	317	320
1915	359	370
1916	645	677
1917	706	851
1918	550	893
1919	373	435
1920	672	778
1921	440	455
1922	476	491
1923	469	504
1924	566	629
1925	689	799
1926	827	979
1927	697	747
1928	479	531
1929	744	812
1930	656	731
1931	563	607
1932	124	144
1933	176	197
1934	382	412
1935	430	460
1936	911	947
1937	1021	1066
1938	542	570
1939	702	735
1940	1436	1480
1941	1715	1803
1942	1583	1774
1943	1512	1717
1944	1316	1564
1945	1311	1493
1946	1515	1659
1947	1298	1430
1948	1473	1604
1949	1424	1550
1950	1925	2059
1951	1903	2008
1952	2204	2319
1953	3115	3273
1954	2244	2450
1955	2264	2551
1956	2222	2567
1957	2539	2905

MC-17, SOURCES

Col. A, Imports for consumption (gross imports, gross weight)

1870-1956. *Hist. Stat. 1960,* series M-212.

1957. *Min. Yearbook 1957,* Vol. I, p. 808.

Col. B, Consumption. Col. A plus output, from Table MO-11, Col. B.

MC-17, NOTES

[a] Imports from Canada only.

Col. A. For 1870-88, data represent only Canadian shipments to the United States; total imports not available. For 1870-72, data are for fiscal years ending June 30.

For 1870-1933, the percentage of manganese content is not specified; for 1934-57, it is 35%-or-more ore only.

Considerable amounts of ferromanganese (75-80% Mn), spiegeleisen (about 20% Mn), silicomanganese, manganiferous iron ore, etc. were imported, and small amounts exported. Manganese also appears in lead and zinc ores. Consequently, it is not possible to obtain or estimate accurately the totals of manganese produced or consumed.

MC-18. NICKEL: Net Imports and Consumption

(thousand tons, nickel content)

	Imports	Exports	Preferred series, net imports	Production	Apparent consumption	Preferred series, consumption
	A	B	C	D	E	F
1871	.011		.011		.011	.011
1872	.013		.013		.013	.013
1873	.001		.001		.001	.001
1874	.002		.002		.002	.002
1875	.001		.001		.001	.001
1876	*		*		*	*
1877	.003		.003		.003	.003
1878	.008		.01		.01	.01
1879	.009		.01		.01	.01
1880	.050		.05		.05	.05
1881	.077		.08		.08	.08
1882	.100		.10		.10	.10
1883	.090		.09		.09	.09
1884	.097		.10		.10	.10
1885	.052		.05		.05	.05
1886	.13		.13		.13	.13
1887	.20		.20	.103	.30	.30
1888	.15		.15	.102	.25	.25
1889	.17		.17	.126	.30	.30
1890	.40		.40	.112	.51	.51
1891	[a]		(.4)	.059	(.50)	(.50)
1892	.45		.4	.046	.50	.50
1893	1.24		1.2	.025	1.3	1.3
1894	.93	.6	.3	.005	.3	.3
1895	2.04	.5	1.5	.005	1.5	1.5
1896	2.37	1.2	1.2	.009	1.2	1.2
1897	2.8	1.9	.9	.012	.9	.9
1898	6.0	2.5	3.5	.006	3.5	3.5
1899	4.4	2.2	2.2	.011	2.2	2.2
1900	5.8	2.6	3.2	.005	3.2	3.2
1901	11.7	2.6	9.1	.003	9.1	9.1
1902	17.0	1.5	15.5	.003	15.5	15.5
1903	18.1	1.1	17.0	.057	17.0	17.0
1904	9.9	3.4	6.5	.012	6.5	6.5
1905	15.5	4.3	11.2	[b]	11.2	11.2
1906	17.0	4.8	12.2	[b]	12.2	12.2
1907	9.3	3.9	5.4	[b]	5.4	5.4
1908	8.4	4.4	4.0	[b]	4.0	4.0
1909	11.1	5.4	5.7		5.7	5.7
1910	16.2	6.9	9.3	[b]	9.3	9.3
1911	14.9	11.3	3.6	[b]	3.6	3.6
1912	23.2	11.6	11.6	[b]	11.6	11.6
1913	23.7	13.1	10.6	[b]	10.6	10.6
1914	17.5	12.4	5.1	[b]	5.1	5.1
1915	28.3	11.9	16.4		16.4	16.4
1916	36.3	15.0	21.3		21.3	21.3
1917	37.8	9.9	27.9		27.9	27.9
1918	36.6	7.9	28.7		28.7	28.7
1919	17.5	1.7	15.8		15.8	15.8
1920	23.4	.5	22.9		22.9	22.9
1921	1.9	.2	1.7		1.7	1.7
1922	6.2	3.6	2.6		2.6	2.6
1923	17.4	.3	17.1		17.1	17.1
1924	15.7	.6	15.1		15.1	15.1
1925	17.9	.9	17.0		17.0	17.0
1926	19.3	.7	18.6		18.6	18.9
1927	17.9	.8	17.1		17.1	17.9
1928	30.3	.9	29.4		29.4	29.9
1929	41.5	1.0	40.5		40.5	40.7
1930	25.3	1.1	24.2		24.2	24.4
1931	15.1	.7	14.4		14.4	14.8
1932	9.4	.8	8.6		8.6	8.8
1933	21.9	.6	21.3		21.3	21.0
1934	21.0	1.7	19.3		19.3	19.5
1935	34.2	1.3	32.9		32.9	33.1
1936	47.6	2.5	45.1		45.1	45.2
1937	47.9	2.8	45.1		45.1	45.9
1938	26.2	4.1	22.1		22.1	22.4
1939	58.2	6.5	51.7		51.7	51.9
1940	83.8	7.5	76.3		76	77
1941	106.2	4.3	101.9		102	91
1942	114.3	5.4	108.9		109	96
1943	122.5	7.3	115.2		115	101
1944	118.3	6.3	112.0		112	97
1945	107.4	2.8	104.6		105	96
1946	92.5	5.1	87.4		87	80
1947	80.7	7.7	73.0		73	81
1948	96.9	5.6	91.3		91	94
1949	91.1	3.0	88.1		88	68
1950	91.3	2.4	88.9		89	100
1951	93.2	3.0	90.2		90	87
1952	108.8	4.9	103.9		104	101
1953	118.7	9.9	108.8	.01	109	106
1954	132.0	9.7	122	2.0	124	95
1955	142.0	13.4	129	4.4	133	110
1956	143.0	29.8	113	7.4	121	128
1957	140.0	8.7	131	12.9	144	122

MC-18, SOURCES

Col. A, Imports (estimated nickel content)
- 1871-85. *Min. Resources 1897,* Vol. I, p. 251, "Nickel" plus "Nickel oxide, alloy of nickel with copper, and nickel matte" (fiscal years ending June 30).
- 1886-97. *Ibid.* (calendar years).
- 1898-99. *Min. Resources 1899.*
- 1900-01. *Min. Resources 1901.*
- 1902-08. *Min. Resources 1909,* Part I, p. 583.
- 1909-10. *Min. Resources 1913,* Part I, p. 344.
- 1911-14. *Min. Resources 1915,* Part I, p. 759.
- 1915-18. *Min. Resources 1919,* Part I, p. 715.
- 1919-21. *Min. Resources 1921,* Part I, p. 212.
- 1922-23. *Min. Resources 1923,* Part I, p. 239.
- 1924-25. *Min. Resources 1926,* Part I, p. 254.
- 1926-53. *Hist. Stat. 1960,* series M-223.
- 1954-57. *Min. Yearbook 1958,* Vol. I, p. 797.

Col. B, Exports (estimated nickel content)
- 1894-1900. Same sources as Col. A.
- 1901-09. *Min. Resources 1909,* Part I, p. 583.
- 1910-15. *Min. Resources 1915,* Part I, p. 759.
- 1916-18. *Min. Resources 1919,* Part I, p. 716.
- 1919-23. *Min. Resources 1923,* Part I, p. 240 (two tables).
- 1924-26. *Min. Resources 1926,* Part I, p. 255.
- 1927-28. *Min. Resources 1928,* Part I, p. A62.
- 1929-31. *Min. Resources 1931,* Part I, p. A63.
- 1932-33. *Min. Yearbook 1934,* p. 548.
- 1934-36. *Min. Yearbook 1937,* p. 643.
- 1937-39. *Min. Yearbook 1940, Review of 1939,* p. 607.
- 1940. *Min. Yearbook Review of 1940,* p. 600.
- 1941-42. *Min. Yearbook 1943,* p. 641.
- 1943-44. *Min. Yearbook 1945,* p. 623.
- 1945-47. *Min. Yearbook 1947,* p. 854.
- 1948-50. *Min. Yearbook 1950,* p. 857.
- 1951-52. *Min. Yearbook 1952,* Vol. I, p. 770.
- 1953-54. *Min. Yearbook 1954,* Vol. I, p. 865.
- 1955. *Min. Yearbook 1957,* Vol. I, p. 887.
- 1956-57. *Min. Yearbook 1958,* Vol. I, p. 803.

Col. C, Preferred series, net imports. Col. A minus Col. B.

Col. D, Production from domestic ores (nickel content)
- 1887-1904. *Min. Resources 1905,* p. 415.
- 1953-1957. *Min. Yearbook 1957,* Vol. I, p. 880, "Mine production" (presumably in nickel content).

Col. E, Apparent consumption. Col. C plus Col. D.

Col. F, Preferred series, consumption (nickel content). For 1926-40, this is apparent consumption; from 1941 on, actual consumption.
- 1871-1925. Col. E, transcribed.
- 1926-44. Bureau of Mines, *Materials Survey: Nickel* (April, 1952), Table XII-3.
- 1945-49. *Ibid.*, Table XII-1.
- 1950-53. *Min. Yearbook 1954,* Vol. I, p. 859.
- 1954-57. *Min. Yearbook 1958,* Vol. I, p. 797.

MC-18, NOTES

( ) Estimated or interpolated.

* Less than ½ ton.

[a] The 1891 datum includes 10,245,200 lb. of "Nickel and nickel matte" valued at $148,687, or 1.45¢/lb., when "nickel" imports were valued at 48.5¢ lb. We feel there is an error here.

[b] Not reported; negligible.

Col. A

1871-77. Nearly all the imports were under the heading "Nickel."

1878-90. Increasing quantities came under the heading "Nickel oxide, alloy of nickel with copper, and nickel matte." Judging by the average values per pound, nearly all of this

was metallic nickel or high grade alloys until 1886. For 1886-90, we have made rough allowances for nonnickel constituents, guided by average value figures (see Table MP-17, Col. C).

1891-1901. A footnote to the tables says, "Includes all nickel imports except manufactures; nearly all of this is nickel matte from Canada, containing about 20 per cent nickel." Accordingly, we have multiplied the quantity data by .20.

1902-18. Most of these imports are reported by "nickel content."

1919-25. The percentage of import quantities classified as "Nickel alloys, pig, bars, etc.," for which nickel content was not reported, rose from 20% in 1919 to 74% in 1925 (Monel metal is about 67% nickel). Small quantities of nickel oxide were also imported and minor quantities of "manufactures" (rod, sheet, etc.). See the following note for the adjustments made to exclude the nonnickel content of nickel alloys, etc. Ore and matte were reported on a nickel content basis (cf. *Min. Resources 1926,* Part I, p. 254).

1926-53. Although the *Historical Statistics* (Bureau of Mines) series begins in 1911, we do not pick up this series until 1926 because of the apparent inclusion of nonnickel content of alloys, etc., prior to that date. For 1926, the Bureau of Mines estimate, as presented in *Historical Statistics,* shows imports of 19.3 thousand tons, nickel content. *Min. Resources 1926,* Part I, p. 254, shows "nickel content" for ore and matte and presumably gross weight for "nickel alloys, pigs, bars, etc.," "nickel oxide" and "manufactured" nickel products for 1924-26. If we made an allowance of 22% for nonnickel content of alloys in 1926, we would arrive at the *Historical Statistics* figure given above. Making a 22% allowance, we have made the following deductions in arriving at the figures in Col. A for 1919-25 (in 1,000 tons):

1919	.8	1923	2.6
1920	.8	1924	2.7
1921	.3	1925	3.5
1922	1.2		

It might also be noted that *Mineral Resources* gives the import data as "Nickel imported for consumption," though for 1924-26, at least, there is very little difference from "general imports," as given in U.S. Department of Commerce, *Foreign Commerce and Navigation of the United States 1926,* Vol. II, p. 585.

Col. B

1901-21. The export data are titled "Nickel, nickel oxide, and matte;" footnote to the 1915 table says, "No nickel matte is known to have been exported in the years 1911 to 1915, inclusive;" and the comment says, "The United States refines much more nickel than it can use, so that though not a large producer, it is a large exporter." Comment in *Min. Resources 1909* is to the same effect. Accordingly, and in view of the fact that NiO is 75-80% nickel by weight, we have made simply a 10% deduction from the gross weight of exports for nonnickel constituents.

1922. Classified data have permitted us to exclude nickel "manufactures" (which were small) and to make allowances for nonnickel content, as follows:

"Oxide and matte," a rough 30%, as we guess most of this mix was oxide, containing about 24% oxygen by weight. Matte produced in Canada in 1926 and 1927 was 50% nickel (*Min. Resources 1927,* Part I, p. 406). An error in this assumption would seriously affect the 1922 figure, but not the others.

"Monel metal and other alloys," 35%.

"Nickel or German silver," 80%.

1923-41. Same allowances as in 1922. However, "nickel" and "Monel metal and other alloys" were not separated, but since in 1922 very little of this was nickel, we have applied the 35% allowance to the two classes together. For "nickel-chrome electric resistance wire" we have deducted a nonnickel allowance of 20%.

1942-55. Same as for 1923-41, except that for the new class, "Ore, concentrates, and matte," we have assumed nonnickel constituents of 50%. Nickel metal classified separately. Scrap included with alloys; we have continued the 35% allowance for this class. Small amounts of "nickel salts" assumed to contain 50% nickel.

1956-57. Same as for 1942-55, except that in 1956 exports of 27,331 tons of "ore, concentrates and matte" were assumed to be 68% nickel, the same proportion as in imports of "nickel ore and matte" in 1955 (U.S. Bureau of the Census, *United States Imports of Merchandise for Consumption,* Report No. FT-110, 1955, p. 115).

Col. D. Byproduct production of nickel from the electrolytic production of copper (and other metals) is not given here, as much of it came from foreign ores. Quantities ran .10 to 1.2 thousand tons annually, as reported in *Mineral Resources* and *Minerals Yearbooks.* In the period 1954-57, in which substantial production was reported, it appears that about 500 tons of the amounts reported in each year were of this byproduct variety.

Col. E. *Mineral Resources 1918,* Part I, p. 785, reported the following apparent consumption (in 1,000 tons):

1911	2.8	1915	15.9
1912	10.6	1916	20.5
1913	9.4	1917	27.2
1914	4.2	1918	28.3

MC-19. MOLYBDENUM: Net Imports and Consumption

(million lb. of Mo content)

	Imports	Exports	Preferred series, net imports (Col. A minus Col. B)	Output	Preferred series, apparent consumption
	A	B	C	D	E
1915				.18	.2
1916				.21	.2
1917				.35	.3
1918				.86	.9
1919				.30	.3
1920	.008			.03	*
1921	.015				*
1922	.206				.2
1923	.017			.02	*
1924	.010			.30	.3
1925	.002	(.3)	-.3	1.15	.8
1926	.013	(.5)	-.5	1.43	.9
1927	.013	.9	-.9	2.29	1.4
1928	0	(1.5)	-1.5	3.33	1.8
1929	0	(2.0)	-2.0	3.90	1.9
1930	0	(2.3)	-2.3	3.76	1.5
1931	.211	(2.1)	-1.9	3.16	1.3
1932	*	(1.7)	-1.7	2.37	.7
1933	.001	4.6	-4.6	5.76	1.2
1934	.214	(7.0)	-6.8	9.38	2.6
1935	.069	(7.6)	-7.5	10.89	3.4
1936	*	11.7	-11.7	17.96	6.3
1937	.008	19.6	-19.6	30.12	10.5
1938	*	16.7	-16.7	25.73	9.0
1939	.026	20.4	-20.4	32.42	12.0
1940	0	6.58	-6.58	25.33	18.75
1941	.004	7.64	-7.64	38.38	30.74
1942	.756	11.60	-10.84	66.44	55.60
1943	1.572	10.07	-8.50	53.96	45.46
1944	2.354	5.99	-3.64	39.42	35.78
1945	.204	2.86	-2.66	32.52	29.86
1946	*	.56	-.56	16.79	16.23
1947	0	2.99	-2.99	22.19	19.20
1948	0	4.13	-4.13	29.67	25.54
1949	.048	5.32	-5.27	23.28	18.01
1950	.003	6.23	-6.23	44.54	38.31
1951	.004	3.73	-3.73	37.96	34.23
1952	.050	6.17	-6.12	42.72	36.60
1953	0	7.04	-7.04	53.82	46.78
1954	.154	13.55	-13.40	64.02	50.62
1955	.134	14.58	-14.45	64.71	50.26
1956	0	17.98	-17.98	57.13	39.15
1957	.027	25.47	-25.44	57.14	31.70

MC-19, SOURCES

COL. A, Imports (ore and concentrate). *Mineral Resources*, beginning with *Min. Resources 1929*, Part I, p. 84, and *Minerals Yearbooks*, beginning with *Min. Yearbook 1934*, p. 418. (1920-22: half of gross weight assumed to be Mo content.)

COL. B, Exports (ore and concentrate)

1925-38. Estimated by applying percentages to output (shipments), in accord with rough estimates in various *Mineral Resources* and *Minerals Yearbooks* as follows (interpolations and extrapolations are indicated by parentheses):

1925, (30%)
1926, (35%)
1927, 40% or 450 tons Mo: *Min. Resources 1927*, Part I, p. 399.
1928, (45%)
1929, (50%)
1930, (60%)
1931, (65%)
1932, (70%)
1933, 80%: *Min. Yearbook 1934*, p. 429.
1934, (75%)
1935, (70%)
1936, 50-75% or "roughly two-thirds": *Min. Yearbook 1937*, p. 654 (estimated as 65%).
1937, 50-75%: *Min. Yearbook 1938*, p. 566 (taken as 65%).
1938, 50-75%: *Min. Yearbook 1939*, p. 618 (taken as 65%).

1939. *Min. Yearbook 1940, Review of 1939*, p. 621, reported 43,554,000 pounds gross weight of "molybdenum concentrates exported." In 1939, 46.87% of concentrates produced was molybdenum (p. 618), and we have applied this percentage to exports. The resulting figure for exports is 63% of the Mo in total shipments of concentrates (p. 618); this ties in closely with the 65% used as a basis for the 1936-38 estimates, above.

1940-57. *Hist. Stat. 1960*, series M-218; and *Min. Yearbook 1958*, Vol. I, p. 793.

COL. C, Preferred series, net imports. Col. A minus Col. B.

COL. D, Output. Table MO-12.

COL. E, Preferred series, apparent consumption. Col. C plus Col. D.

MC-19, NOTES

( ) Interpolation or extrapolation.

* COL. A. Less than 500 lb. COL. E. Less than 50,000 lb.

COL. A. For 1931-39, imports of ferromolybdenum, other alloys, and metal were included with imports of ore and concentrates.

MC-20. CHROMIUM: Imports

(thousand long tons of Cr_2O_3)

	Imports		Exports ore	Net imports
	Chromate & bichromate of potash	Chrome ore		
	A	B	C	D
1870	.24			.2
1871	.43			.4
1872	.23			.2
1873	.22			.2
1874	.27			.3
1875	.28			.3
1876	.33			.3
1877	.49			.5
1878	.38			.4
1879	.52			.5
1880	.69			.7
1881	.86			.9
1882	.48			.5
1883	.39			.4
1884	.51	1.12		1.6
1885	.28	.01		.3
1886	.39	1.41		1.8
1887	.34	.59		.9
1888	.34	1.86		2.2
1889	.31	2.30		2.6
1890	.26	1.83		2.1
1891	.15	1.87		2.0
1892	.10	2.07		2.2
1893	.19	2.67		2.9
1894	.29	1.46		1.8
1895	.40	2.20		2.6
1896	.19	3.6		3.8
1897	.26	4.9		5.2
1898	.23	6.8		7.0
1899	.22	6.6		6.8
1900	.02	7.4		7.4
1901	.08	8.4		8.5
1902	n.a.	16.6		16.6
1903	.01	9.6		9.6
1904	.01	10.2		10.2
1905	.01	22.9		22.9
1906	.01	18.2		18.2
1907	.00	17.6		17.6
1908	.04	11.7		11.7
1909	.11	16.6		16.7
1910		16.2		16.2
1911		15.8		15.8
1912		22.7		22.7
1913		27.4		27.4
1914		31.4		31.4
1915		32.1		32
1916		48.7		49
1917		30.3		30
1918		42.1		42
1919		25.8		26
1920		63.1		63
1921		34.4		34
1922		37.8		38
1923		54.5		54
1924		49.7		50
1925		62.9		63
1926		90.5		90
1927		93.4		93
1928		91.0		91
1929		133.4		133
1930		137.2		137
1931		89.3		89
1932		37.4		37
1933		48.9		49
1934		80.8		81
1935		108.8		109
1936		136.2		136
1937		232.6		233
1938		147.9		148
1939		133.4		133
1940		276		276
1941		418		418
1942		368		368
1943		348		348
1944		318	*	318
1945		343	5	338
1946		284	1	283
1947		415	1	414
1948		578	1	577
1949		451	1	450
1950		489	1	488
1951		536	1	535
1952		641	1	640
1953		835	*	835
1954		552	*	552
1955		688	1	687
1956		816	1	815
1957		856	*	856

MC-20, SOURCES

Col. A, Chromate and bichromate of potash imports. *Min. Resources 1909*, Part I, p. 593, table on chromate and bichromate of potash, chromic acid and chrome ore imported and entered for consumption, Col. 1 times .44 times 1/2240. The factor 1/2240 is to convert pounds to long tons; the factor .44 is derived as follows: Relative chromium contents by weight of the different compounds are computed from atomic weights:

Chromite: Cr_2O_3: Cr: $2 \times 52 = 104$
O: $3 \times 16 = 48$
152

$104/152 = 68\%$

Potassium chromate: K_2CrO_4: K: $2 \times 39 = 78$
Cr: 52
O: $4 \times 16 = 64$
194

$52/194 = 27\%$

Potassium bichromate: $KHCrO_4$: K 39
H 1
Cr 52
O 64
156

$52/156 = 33\%$

Chromate and bichromate of potash thus average 30% Cr, or $30/68 = .44$ as much Cr as Cr_2O_3.

After 1899 the imports of chromates were always trivial.

Col. B, Chrome ore imports

1884-1909. *Min. Resources 1909, loc. cit.*, times .42 (*Mineral Facts & Prob.*, p. 179 shows tenor of ore used in the U.S. varied between 41.3% and 42.9% Cr_2O_3 in 1949-1953. Discussion in *Min. Resources 1917* and *1920* indicates that this percentage concentration was about the commercial grade then also). Apparently no ore was imported before 1884, judging by the description of the table and the trend of the data.

1910-41. *Min. Yearbook 1941*, p. 612, times .42.

1942-46. *Min. Yearbook 1946*, p. 237, times .42 times .893 to convert short tons to long tons ($.893 \times .42 = .375$).

1947-51. *Min. Yearbook 1951*, p. 274, Table 1, times .375.

1951-55. *Min. Yearbook 1955*, Vol. I, p. 317, times .375.

1956-57. *Min. Yearbook 1957*, Vol. I, p. 347, times .375.

Col. C, Exports

1944-45. *Min. Yearbook 1945*, p. 607, times .42 (see above, Col. B).

1946-51. *Min. Yearbook 1951*, p. 274, Table 1, exports times .42.

1952-55. *Min. Yearbook 1955*, Vol. I, chromium chapter, Table 1, exports times .42.

1956-57. *Min. Yearbook 1957*, Vol. I, chromium chapter, Table 1, exports times .42.

Col. D, Net imports

1870-1943. Sum of Cols. A and B.

1944-57. Col. B minus Col. C.

MC-20, NOTES

* Less than 500 tons.

We have neglected chromic acid, chromium, ferrochromium, and some other imports as being trivial by comparison to chromate (in the early years) and ore.

MC-21. COPPER: Net Imports

(thousand tons)

	Total exports	Exports of old and scrap	Exports of primary (Col. A minus Col. B)	Total imports	Imports of old and scrap	Imports of primary (Col. D minus Col. E)	Preferred series, net imports of primary
	A	B	C	D	E	F	G
1870	4.32			.61	.13	.48	-3.84
1871	4.77			.51	.18	.32	-4.44
1872	.64			2.92	.57	2.35	1.71
1873	.65			6.62	.71	5.91	5.26
1874	.49			.96	.37	.59	.10
1875	[a]4.15			.84	.20	.64	-3.51
1876	7.56			1.11	.12	.99	-6.57
1877	7.23			.70	.11	.59	-6.64
1878	6.33			.27	.10	.17	-6.16
1879	9.17			.08	.06	.02	-9.15
1880	2.50			3.13	.35	2.78	.28
1881	3.83			.69	.27	.42	-3.41
1882	2.29			.69	.25	.44	-1.85
1883	16.3			.67	.16	.50	-15.8
1884	34.8			1.61	.07	1.54	-33.3
1885	38.4			1.92	.04	1.88	-36.5
1886	22.0			2.51	.02	2.49	-19.5
1887	20.7			1.60	.02	1.58	-19.1
1888	38.9			2.45	.02	2.43	-36.5
1889	37.5			1.82	.01	1.81	-35.7
1890	20.8			2.14	.14	2.00	-18.8
1891	60.9			6.34	.07	6.27	-54.6
1892	49.3			3.92	.04	3.88	-45.4
1893	96.5			5.62	.03	5.59	-90.9
1894	85.9			3.85	.08	3.77	-82.1
1895	69.7			6.05	.67	5.38	-64.3
1896	144.1			7.24	1.21	6.03	-138
1897	147.1			11.4	.89	10.5	-137
1898	151.8			15.6	.99	14.6	-137
1899	127.8			41.4	3.34	38.1	-89.7
1900	177.1			54.4	1.68	52.7	-124
1901	106.8			80.8		[b]80.8	-26.0
1902	186.6			76.8		[b]76.8	-110
1903	162.4			77.4		[b]77.4	-85.0
1904	289.2			90.1		[b]90.1	-199
1905	281.2			104.5		[b]104.5	-177
1906	240.3			111.9		[b]111.9	-128
1907	276.8			125.8		[b]125.8	-151
1908	348.7			109.0	1.09	107.9	-241
1909	358.9			160.3	1.40	158.9	-200
1910	369.1			172.2		[b]172.2	-197
1911	414.7			167.3		[b]167.3	-247
1912	410.7			205.1		[b]205.1	-206
1913	487.8			204.4		[b]204.4	-283
1914	438.8			153.2	2.40	150.8	-288
1915	350.0			157.4	3.68	153.7	-196
1916	402.7			231.1	4.73	226.4	-176
1917	577.3			278.0	8.95	269.0	-308
1918	381.1			287.2	.96	286.2	-94.9
1919	263.5			214.6	2.11	212.5	-51.0
1920	318.6			241.3	5.78	235.5	-83.1
1921	321.0			174.2	2.85	171.4	-150
1922	371.7			268.8	10.7	258.1	-114
1923	415.0			338.2	2.74	335.5	-79.5
1924	559.9			384.4	1.85	382.6	-177
1925	540.4	6.0	534.4	326.5	5.21	321.3	-213
1926	482.8	9.7	473.1	389.7	5.50	384.2	-88.9
1927	538.4	22.7	515.7	359.2	3.74	355.5	-160
1928	562.5	27.7	534.8	393.5	5.32	388.2	-147
1929	499.2	18.8	480.4	487.2	6.80	480.4	*
1930	376.6	16.9	359.7	408.6	3.75	404.8	45.1
1931	278.9	33.6	245.3	292.9	2.55	290.4	45.1
1932	164.1	17.2	146.9	196.0	1.28	194.7	47.8
1933	174.6	14.2	160.4	145.6	.02	145.6	-14.8
1934	312.7	12.6	300.1	213.3	.02	213.3	-86.8
1935	302.9	9.5	293.4	257.2	.54	256.7	-36.7
1936	262.4	13.2	249.2	190.3	1.61	188.7	-60.5
1937	350.3	20.9	329.4	279.9	3.34	276.6	-52.8
1938	422.0	21.8	400.2	252.2	1.31	250.9	-149
1939	427.6	17.6	410.0	336.3	3.75	332.6	-77.4
1940	427.9	7.2	420.8	491.3	1.81	489.5	68.7
1941	158.9	3.3	155.6	735.5	2.29	733.2	578
1942	213.9	1.2	212.7	764.4	1.06	763.3	551
1943	395.7	.0	395.7	716.7	2.39	714.3	319
1944	237.5	.1	237.4	785.4	1.07	784.3	547
1945	132.6	.1	132.5	853.2	1.38	851.8	719
1946	97.5	.9	96.6	396.3	1.11	395.2	299
1947	197.1	1.0	196.1	413.9	5.95	408.0	212
1948	209.5	2.3	207.2	507.4	9.33	498.1	291
1949	196.2	8.3	187.9	552.7	6.80	545.9	358
1950	193.0	9.4	183.6	690.4	38.8	651.6	468
1951	166.5	7.7	158.8	489.1	5.56	483.5	325
1952	213.0	8.9	204.1	618.9	4.49	614.4	410
1953	172.2	34.6	137.6	676.1	7.79	668.3	531
1954	315.1	75.8	239.3	594.8	4.68	590.1	351
1955	273.1	31.1	242.0	594.1	12.57	581.5	340
1956	294.5	25.7	268.8	595.7	5.74	590.0	321
1957	446.3	49.0	397.3	594.0	5.76	588.2	191

MC-21, SOURCES

COL. A, Total exports
1870-1924. Robert B. Pettengill, *The United States Foreign Trade in Copper by Classes and Countries, 1790-1932* (Ph.D. dissertation, Stanford University, May 1934), pp. facing 57, 89, 127, 192 (1870-1880 figures, years ending June 30, other years on calendar basis), "Total exports, unmanufactured copper" changed from pounds to short tons and multiplied by 1.021 (link factor: see notes, below).
1925-49. Bureau of Mines, *Materials Survey: Copper* (Sept. 1952), Table IV-17, total exports of copper from the United States.
1950-57. *Min. Yearbooks*, copper chapter, table on total copper exported from the United States.

COL. B, Exports of old and scrap copper
1925-49. Bureau of Mines, *Materials Survey: Copper*, Table IV-17, exports of old and scrap.
1950-57. *Min. Yearbooks*, copper chapter, table on old and scrap copper exported from the United States.

COL. C, Exports of primary copper. Col. A minus Col. B.

COL. D, Total imports
1870-1924. Pettengill, *loc. cit.*, "Total net imports, unmanufactured copper" changed from pounds to short tons.
1925-49. Bureau of Mines, *Materials Survey: Copper*, Table IV-10, grand total, copper (unmanufactured) imported into the United States.
1950-57. *Min. Yearbooks*, copper chapter, table on copper (unmanufactured) imported into the United States.

COL. E, Imports of old and scrap copper
1870-1900. *Min. Resources 1897*, Vol. I, p. 162, and *1900*, p. 163, "Copper imported and entered for consumption, old, fit only for remanufacture" changed from pounds to short tons (1870-85 figures, years ending June 30; calendar years thereafter).
1908-09. *Min. Resources 1908*, Part I, p. 223, and *1909*, Part I, p. 177, "Copper, old, fit for remanufacture."
1914-32. Pettengill, *op. cit.*, facing p. 226, "Imports of metallic copper by classes, old and clippings" changed from pounds to short tons.
1933-34. *Stat. Abstract 1935*, p. 530, "Copper, scrap, scale and clippings."
1935-54. *American Bureau of Metal Statistics, 1954 Yearbook*, p. 28, "Old and scrap copper, etc.".
1955-57. *Min. Yearbook 1958*, Vol. I, p. 329.

COL. F, Imports of primary copper. Col. D minus Col. E.

COL. G, Preferred series, net imports
1870-1924. Col. F minus Col. A.
1925-57. Col. F minus Col. C.

MC-21, NOTES

* Less than 50 tons.

[a] The 1875 export figure is felt by Pettengill to be in error (see Pettengill, *op. cit.*, p. 77). His revision would result in total exports of 6.72 thousand tons.

[b] Data on imports of scrap are not readily available for 1901-07 and 1910-13. The inability to separate scrap imports for these years from total imports may significantly affect the consistency of the import series but will be too small to significantly affect the consistency of net imports or apparent consumption derived from net imports.

COL. A. Prior to 1915, exports of copper ores and matte were reported together in gross weight terms. Pettengill (*op. cit.*, Appendix A, p. 323) estimated the tenor of ore by dividing value of ore and matte exports by the product of gross weight of exports times copper ingot price. This was used as a rough index of variations of tenor, and provided the basis for copper content estimates.

There is an overlap of eight years between the Pettengill and *Materials Survey* series. The Pettengill figures in thousands of short tons and the *Materials Survey* figures as percent of the Pettengill figures follow:

Years	*Pettengill exports (1000 short tons)*	*Materials Survey as percent of Pettengill*
1925	535.0	101.0%
1926	473.6	101.9
1927	527.1	102.1
1928	552.7	101.8
1929	486.7	102.6
1930	366.4	102.8
1931	272.3	102.4
1932	161.0	101.9

Pettengill's series has been raised 2.1% to match the *Materials Survey* series.

Total exports include exports of domestic materials plus exports of refined copper processed from foreign materials.

COL. B. Prior to 1913 exports of scrap were inseparably included with exports of refined materials. Between 1913 and 1925, scrap exports were less than one percent of total exports, according to foreign commerce tables in 1921 and 1925 *Stat. Abstracts*. It is assumed that scrap exports prior to 1913 were negligible.

COL. D. The import figures throughout are general imports which include all imports entering the country for immediate consumption plus those entering under bond.

Pettengill's use of the term "net imports" refers to general imports minus exports of foreign ore and concentrates from bonded warehouses that have undergone no processing in the United States. The Bureau of Mines does not deduct these foreign exports from general imports, so that the resultant long-term series in Col. D is not strictly consistent. The amount of foreign exports, however, is negligible.

The overlap of the Pettengill and *Materials Survey* series, 1925-1932, shows less than one percent difference for each year except 1931 and 1932. During these years, the *Materials Survey* figures were respectively 1.7% less and 1.3% greater than Pettengill's.

MC-22. COPPER: Consumption

(thousand tons)

	ABMS, net consumption minus custom intake	Metal Stat., consumption of copper	Col. A / Col. B	Table MO-13, smelter output	Table MC-21, net imports	Apparent consumption (Col. D plus Col. E)	Col. B / Col. F	Preferred series, consumption of copper
	A	B	C	D	E	F	G	H
1870				14.1	-3.8	10.3		10.3
1871				14.6	-4.4	10.2		10.2
1872				14.0	1.7	15.7		15.7
1873				17.4	5.3	22.7		22.7
1874				19.6	.1	19.7		19.7
1875				20.2	-3.5	16.7		16.7
1876				21.3	-6.6	14.7		14.7
1877				23.5	-6.6	16.9		16.9
1878				24.1	-6.2	17.9		17.9
1879				25.8	-9.2	16.6		16.6
1880				30.2	.3	30.5		30.5
1881				35.8	-3.4	32.4		32.4
1882				45.3	-1.8	43.5		43.5
1883				57.8	-15.8	42.0		42.0
1884				72.5	-33.3	39.2		39.2
1885				82.9	-36.5	46.4		46.4
1886				78.9	-19.5	59.4		59.4
1887				90.7	-19.1	71.6		71.6
1888				113	-36.5	76.5		76.5
1889				113	-35.7	77.3		77.3
1890				130	-18.8	111		111
1891		88.2		142	-54.6	87.4	1.009	88.2
1892		128		172	-45.4	127	1.008	128
1893		75.7		165	-90.9	74.1	1.022	75.7
1894		98.7		177	-82.1	94.9	1.040	98.7
1895		129		190	-64.3	126	1.024	129
1896		98.1		230	-138	92.0	1.066	98.1
1897		117		247	-137	110	1.064	117
1898		150		263	-137	126	1.190	150
1899		206		284	-89.7	194	1.062	206
1900		178		303	-124	179	.994	178
1901		191		301	-26.0	275	.695	191
1902		276		330	-110	220	1.255	276
1903		263		349	-85.0	264	.996	263
1904		241		406	-199	207	1.164	241
1905		281		444	-177	267	1.052	281
1906		343		459	-128	331	1.036	343
1907		244		434	-151	283	.862	244
1908		240		471	-241	230	1.043	240
1909		353		546	-200	346	1.020	353
1910		375		540	-197	343	1.093	375
1911		355		549	-247	302	1.175	355
1912		410		622	-206	416	.986	410
1913		406		612	-283	329	1.234	406
1914		351		575	-288	287	1.223	351
1915		568		694	-196	498	1.141	568
1916		739		964	-176	788	.938	739
1917		697		943	-308	635	1.098	697
1918		831		954	-94.9	859	.967	831
1919		457		643	-51.0	592	.772	457
1920		527		605	-83.1	522	1.010	527
1921		305		253	-150	103	2.961	305
1922		448		475	-114	361	1.241	448
1923		650		718	-79.5	638	1.019	650
1924		677		817	-177	640	1.058	677
1925		701		837	-213	624	1.123	701
1926		785		870	-88.9	781	1.005	785
1927		711		842	-160	682	1.043	711
1928		804		913	-147	766	1.050	804
1929		889		1001	0.0	1001	.888	889
1930		633		697	45.1	742	.853	633
1931		451		521	45.1	566	.797	451
1932		260		272	47.8	320	.812	260
1933		339		225	-14.8	210	1.614	339
1934		323		244	-86.8	157	2.057	323
1935		441		381	-36.7	344	1.282	441
1936		656		611	-60.5	550	1.193	656
1937		695		835	-52.8	782	.889	695
1938		407		562	-149	413	.985	407
1939		715		713	-77.4	636	1.124	715
1940		1009		909	68.7	978	1.032	1009
1941	1546	1642	.942	966	578	1544	1.063	1642
1942	1464	1608	.910	1088	551	1639	.981	1608
1943	1618	1502	1.077	1093	319	1412	1.064	1502
1944	1596	1504	1.061	1003	547	1550	.970	1504
1945	1413	1415	.999	783	719	1502	.942	1415
1946	1199	1391	.861	600	299	899	1.547	1391
1947	1233	1286	.959	863	212	1075	1.196	1286
1948	1264	[a]1214	1.041	842	291	1133	1.071	1214
1949	918	[a]1072	.856	758	358	1116	.961	1072
1950	1321	[a]1447	.913	911	468	1379	1.049	1447
1951	1338	[a]1304	1.026	931	325	1256	1.038	1304
1952	1345	[a]1360	.989	927	410	1337	1.017	1360
1953	1265	[a]1435	.882	943	531	1474	.974	1435
1954	1129	[a]1235	.913	834	351	1185	1.042	1235
1955	1293	[a]1336	.968	1007	340	1347	.992	1336
1956	1277	[a]1367	.934	1118	321	1439	.950	1367
1957	1170	[a]1239	.944	1081	191	1272	.974	1239

MC-22, SOURCES

Col. A, American Bureau of Metal Statistics, *1954 Yearbook*, p. 15, "Net consumption by fabricators" minus p. 12, "Custom intake, secondary"; *1957 Yearbook*, p. 9, same items.

Col. B

1891-1955. *Metal Stat. 1957*, p. 317 (source, Bureau of Mines), "Consumption of copper in U.S."

1956-57. *Metal Stat. 1959*, p. 321.

Col. C, Ratio, Col. A/Col. B.

Col. D, Table MO-13, Col. B, transcribed.

Col. E, Table MC-21, Col. G, transcribed.

Col. F, Apparent consumption. Sum of Col. D and Col. E.

Col. G, Ratio, Col. B/Col. F.

Col. H, Preferred series

1870-90. Col. F, transcribed.

1891-1957. Col. B, transcribed.

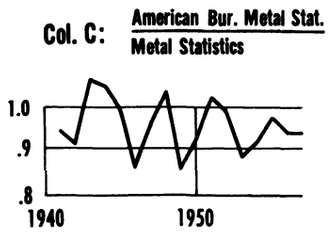
MC-22, NOTES

[a] Deliveries to national stockpile included.

Col. A. The American Bureau of Metal Statistics series is derived according to the method shown on p. 6 of the *1954 Yearbook*, referring to "U. S. Consumption, Primary Copper" for 1951-54.

Col. B. The series is referred to in *Minerals Yearbook* as "new refined copper withdrawn from total year's supply on domestic account" and includes changes in stocks at refineries. Some refined secondary metal may be included in imports, exports, and stocks and cannot be determined separately. Beginning in 1948, deliveries to national stockpile are included.

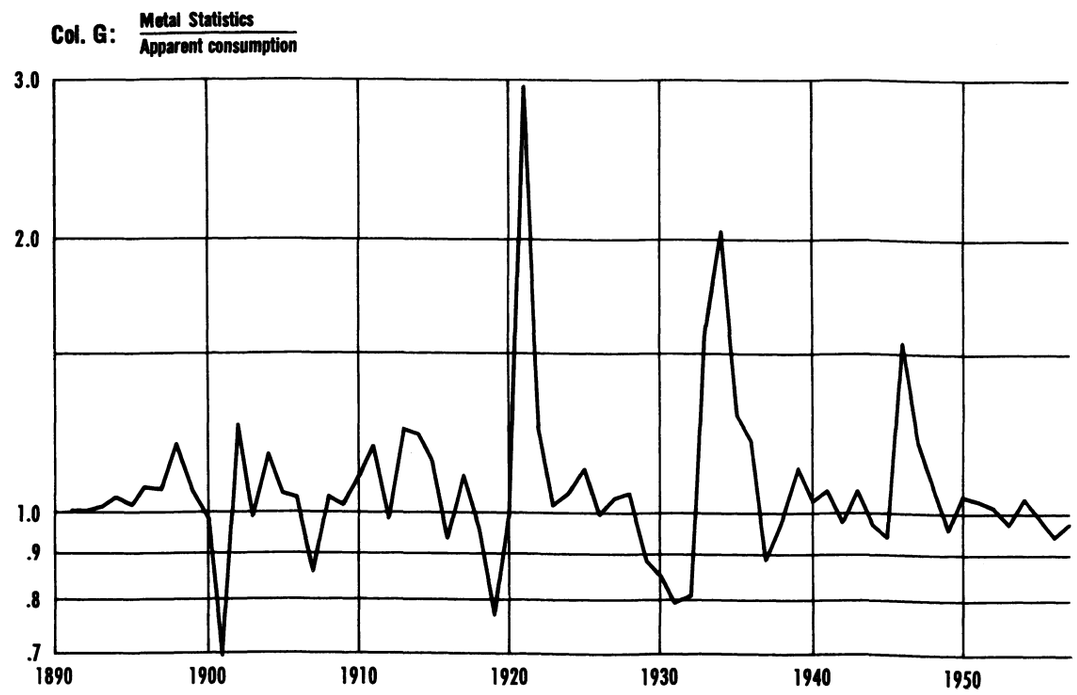
Col. C. The Col. C chart shows the ratio of fabricators' consumption to apparent consumption. The differences are apparently due to (a) changes in consumers' stocks, included in Col. A; (b) national stockpile deliveries in Col. B; and (c) deduction in Col. A of custom intake of scrap by smelters.



Col. G. The Col. G chart shows the ratio of the *Metal Statistics* (Bureau of Mines) series on apparent consumption to our derived series. The former includes adjustments for changes in stocks, and the ratio, consequently, reflects these changes in its fluctuations. (In 1921, for example, stocks decreased by 100,000 tons of refined copper and 100,000 of blister.)

Other differences in the series are the use of refining output by the Bureau of Mines as against smelter output in Col. D, and the unavoidable inclusion of some secondary refined copper in foreign trade and stocks by the Bureau of Mines.

Col. H. A preferred series has been derived by joining, without adjustment, our derived series to the Bureau of Mines series. The American Bureau of Metal Statistics series, although a more accurate measure of actual consumption, has not been used because of its inconsistency with the earlier series.



MC-23. LEAD: Net Imports

(thousand tons)

	General imports	General exports	Net imports (Col. A minus Col. B)	Foreign lead exports	Domestic lead exports	Net imports (Col. A minus Cols. D and E)	Imports for consumption	Col. F minus Col. G	Preferred series, net imports
	A	B	C	D	E	F	G	H	I
1870							45		45
1871							47		47
1872							39		39
1873							38		38
1874							23		23
1875							17		17
1876							7		7
1877							7		7
1878							4		4
1879							1		1
1880							4		4
1881							2		2
1882							3		3
1883							3		3
1884							2		2
1885							3		3
1886							9		9
1887							4		4
1888							1		1
1889							2		2
1890							15		15
1891							22		22
1892							28		28
1893							31		31
1894							36		36
1895	87			20	a	67	77	-10	77
1896	94			32	a	62	24	38	24
1897	85			52	a	33	24	9	24
1898	92			69	a	23	9	14	9
1899	96			79	a	17	5	12	5
1900	98			103	a	-5	7	-12	-5
1901	112			105	a	7	7	0	7
1902	108			85	a	23	14	9	23
1903	106			88	a	18	25	-7	18
1904	113			91	a	22	19	3	22
1905	98			68	a	30	30	0	30
1906	84			53	a	31	35	-4	31
1907	80			60	a	20	16	4	20
1908	112			86	a	26	10	16	26
1909	114			91	a	23	18	5	23
1910	109			79	a	30			30
1911	90			114	a	-24			-24
1912	84			76	a	8			8
1913	57			54	a	3			3
1914	28			31	59	-62			-62
1915	52			43	88	-79			-79
1916	35			15	100	-80			-80
1917	78			45	54	-21			-21
1918	99			63	42	-6			-6
1919	71			43	10	18			18
1920	98			24	3	71			71
1921	74			34	2	38			38
1922	78			38	6	34			34
1923	135			61	2	72			72
1924	138			92	5	41			41
1925	120	115	5	110	5	5			5
1926	145	90	55	86	4	55			55
1927	159	137	22	135	2	22			22
1928	154	129	25	115	14	25			25
1929	114	86	28						28
1930	76	60	16						16
1931	52	,32	20						20
1932	33	31	2						2
1933	7	29	-22						-22
1934	13	13	*						*
1935	23	16	7						7
1936	23	27	-4						-4
1937	39	29	10						10
1938	62	55	7						7
1939	85	85	*						*
1940	277	39	238						238
1941	377	36	341						341
1942	489	28	461						461
1943	316	17	299						299
1944	315	36	279						279
1945	297	16	281						281
1946	160	1	159						159
1947	225	2	223						223
1948	344	1	343						343
1949	394	3	391						391
1950	538	4	534						534
1951	258	2	256						256
1952	628	3	625						625
1953	552	5	547						547
1954	443	5	438						438
1955	462	5	457						457
1956	480	8	472						472
1957	531	6	525						525

MC-23, SOURCES

COL. A, General imports
1895-1900. Worksheet 1 of this table, Col. G.
1901-57. *Ibid.*, Col. F (no deduction for re-exports).
COL. B, General exports. Worksheet 2 of this table, Col. I.
COL. C, Net imports. Col. A minus Col. B.
COL. D, Foreign lead exports
1895-99. Worksheet 2, Col. J.
1900-28. *Ibid.*, Col. G.
COL. E, Domestic lead exports. Worksheet 2, Col. H.
COL. F, Net imports. Col. A minus Cols. D and E.
COL. G, Imports for consumption. Worksheet 1, sum of Cols. A through D.
COL. H, Col. F minus Col. G.
COL. I, Preferred series
1870-99. Col. G, transcribed.
1900-24. Col. F, transcribed.
1925-57. Col. C, transcribed.

MC-23, NOTES

* Less than 500 tons.
[a] Believed to be practically zero. See Worksheet 2 of this table, Col. G, and notes to Col. F, below.

COL. A. The series from Cols. F and G of Worksheet 1 of this table apparently differ only in being calendar and fiscal years, respectively. The aggregates for 1901-12 are 1,210 for Col. F and 1,240 for Col. G.

COL. D. The 1895-99 figures are probably too low, as noted in Worksheet 2 (note to Col. G vs. Col. J). If this is indeed the case, it would make Col. F (net imports) too high and help account for the considerable excess of Col. F over Col. G (imports for consumption) in this period.

COL. F. Domestic exports appear to have been practically zero in the period 1900-13 (cf. Worksheet 2, Col. G and notes; see also table in *Min. Resources 1900*, pp. 202-03). All lead exports were derived from foreign ores, so as to take advantage of the 1.5¢ per pound drawback of duty. Therefore, subtracting foreign exports from general imports gives net imports for consumption.

COL. G. Imports for consumption should equal net imports, as domestic exports were negligible (see note to Col. F, above).

MC-23, WORKSHEET 1. LEAD: Imports

(thousand tons)

	Ore & dross	Pigs and bars	Sheets, pipe, and shot	Old and scrap	Caswell, imports in pigs and ores	Bu. Mines, general imports (lead content)	Stat. Abstract, pig, bars, old and other
	A	B	C	D	E	F	G
1870	*	42.9	.1	1.9	28.6		
1871	*	45.7	*	1.1	28.0		
1872	*	36.5	*	2.1	26.4		
1873	0	36.2	*	1.8	22.1		
1874	0	23.1	*	.2	17.7		
1875	*	16.4	*	.2	7.3		
1876	0	7.2	*	.1	4.7		
1877	*	7.3	*	.1	.7		
1878	0	3.4	*	.1	.3		
1879	0	.6	*	*	2.5		
1880	0	3.4	*	.1	3.2		
1881	*	2.2	*	.1	3.5		
1882	*	3.0	*	.1	2.5		
1883	*	2.0	*	.5	1.1		
1884	*	1.5	*	.1	2.5		
1885	*	2.9	.5	*	2.7		
1886	.4	8.8	*	*	18.6		
1887	.1	3.9	*	.1	19.4		
1888	*	1.3	*	*	28.7		
1889	.2	1.4	*	*			
1890	5.5	9.7	*	a			
1891	20.3	1.7	.2	a			
1892	27.1	.8	*	a			
1893	29.2	2.0	*	a			
1894	16.5	19.6	*	a			
1895	22.5	54.8	.1	a			87.3
1896	18.9	5.3	*	a			93.8
1897	15.5	8.0	*	a			84.5
1898	8.3	.2	.1	a			92.4
1899	3.4	1.7	.1	a			96.2
1900	5.1	1.8	*	b			98.2
1901	5.2	1.8	*	b		112.5	125.6
1902	7.2	6.2	.1	b		107.6	103.4
1903	20.6	4.5	*	b		106.4	106.4
1904	9.5	8.7	*	b		112.9	110.2
1905	24.8	5.2	*	b		98.4	108.9
1906	22.6	12.4	.2	b		84.1	92.5
1907	7.3	7.8	.4	b		79.8	75.3
1908	7.1	2.7	*	b		112.1	97.5
1909	14.5	3.5	*	b		114.2	116.0
1910						108.6	105.4
1911						90.0	104.4
1912						83.6	94.5
1913						57.1	72.6
1914						28.3	30.2
1915						51.5	41.6
1916						35.3	43.4
1917						78.3	
1918						98.6	
1919						70.9	
1920						98.5	
1921						74.3	
1922						77.8	
1923						135.3	
1924						137.7	
1925						120	
1926						145	
1927						159	
1928						154	
1929						114	
1930						76	
1931						52	
1932						33	
1933						7	
1934						13	
1935						23	
1936						23	
1937						39	
1938						62	
1939						85	
1940						277	
1941						377	
1942						489	
1943						316	
1944						315	
1945						297	
1946						160	
1947						225	
1948						344	
1949						394	
1950						538	
1951						258	
1952						628	
1953						552	
1954						443	
1955						462	
1956						480	
1957						531	

MC-23, Worksheet 1, SOURCES

COL. A, Ore and dross

1870-97. *Min. Resources 1897,* Vol. I, p. 203 (1870-86 are years ending June 30; 1887-97 are calendar years).

1898-99. *Min. Resources 1900,* p. 199.

1900-09. *Min. Resources 1909,* Part I, p. 193, "Lead in ore" plus "base bullion."

COL. B, Pigs and bars. Same as Col. A.

COL. C, Sheets, pipe, and shot. Same sources as Col. A.

COL. D, Old and scrap (1870-89). Same source as Col. A for this period, p. 205.

COL. E, Imports in pigs and ores (1870-88). Same source as Col. A, p. 208, citing "records kept by Mr. A. E. Caswell," sum of "In pigs" and "In ores" (latter zero until 1886). Calendar years. Apparently imports for consumption.

COL. F, General imports

1901-03. *Min. Resources 1905,* p. 369, "Total imports" (source cited as Bureau of Statistics). Calendar years.

1904-09. *Min. Resources 1909,* Part I, p. 193, "Imports of lead, in ore, base bullion, and refined, by countries." Presumably calendar years. This series is identical to that of 1901-03 for the overlap years, 1904 and 1905 (source cited as Bureau of Statistics).

1910-17, *Min. Resources 1917,* Part I, p. 894 (source cited as Bureau of Foreign and Domestic Commerce). Presumably calendar years.

1918-20. *Min. Resources 1920,* Part I, p. 92.

1921-24. *Min. Resources 1928,* Part I, p. 632. This series does not exactly coincide with that in *Mineral Facts & Prob.,* but differs by only about 1 percent for 1925-28.

1925-50. *Mineral Facts & Prob.,* p. 436.

1951-54. *Min. Yearbook 1954,* Vol. I, p. 671.

1955-57. *Min. Yearbook 1957,* Vol. I, p. 712.

COL. G, Pig, bars, old, and other

1895. *Stat. Abstract 1901,* p. 187, "Included in all other manufactures of iron and steel [sic!] prior to 1897; not separately stated prior to July 1, 1894" (years ending June 30).

1896-1904. *Stat. Abstract 1905,* p. 290, "Pigs, bars, old and other, in ore and base bullion" (years ending June 30).

1905-09. *Stat. Abstract 1911,* p. 438-39, "Lead in ore and base bullion" plus "Pigs, bars, and old" (years ending June 30).

1910-16. *Stat. Abstract 1916,* p. 418, "Lead ore," "Lead in other ore," "Bullion and base bullion," and "Pigs, bars and old," sum "Total lead" (years ending June 30).

MC-23, Worksheet 1, NOTES

* Less than 50 tons.

[a] "Included in pigs and bars after 1889."

[b] Included with "pigs and bars."

MC-23, WORKSHEET 2. LEAD: Exports

(thousand tons)

	Bu. of Stat., exports of pigs, bars, and old	Bu. of Stat. and Bu. of Foreign and Domestic Com., exports of foreign lead						Domestic exports	General exports	Stat. Abstract, foreign lead exports
		Lead content ore	Lead content base bullion	Pigs, bars, & old	Exported in manufactures with benefit of drawback		Total exports of foreign			
					Lead content of ore	Pigs, bullion, & old				
	A	B	C	D	E	F	G	H	I	J
1895	.8									20.0
1896	8.2									32.4
1897	3.9									52.3
1898										69.3
1899										78.6
1900			98.9	*	.9	3.4	103.2	[b]		78.1
1901			97.4	*	4.7	3.0	105.1	[b]		109.7
1902			78.9	*	1.1	4.8	84.8	[b]		87.2
1903			81.9	*	1.2	4.7	87.8	[b]		73.8
1904			83.8	*	1.5	5.2	90.5	[b]		85.7
1905			58.6	.8	1.8	6.4	67.6	[b]		75.6
1906			47.2	*	1.7	4.3	53.2	[b]		
1907			51.4	*	.9	7.4	59.7	[b]		40.3
1908			76.8	*	4.7	4.6	86.1	[b]		71.2
1909		59.2	[a]26.9	*	1.5	3.3	90.9	[b]		89.6
1910		11.3	58.5	*	3.3	5.5	78.6	[b]		59.9
1911		19.6	76.0	6.1	.3	11.7	113.7	[b]		98.0
1912		6.4	58.5	.1	.1	11.3	76.4	[b]		86.0
1913		5.9	38.6	.1	*	9.7	54.3	[b]		56.9
1914		3.4	5.5	12.7	2.0	7.5	31.1	58.7		23.8
1915				38.6	4.0		42.6	88.3		29.9
1916				9.9	5.2		15.1	100.5		9.7
1917				37.7	7.5		45.2	53.7		36.0
1918				59.4	3.4		62.8	41.8		54.3
1919				41.0	1.9		42.9	10.5		40.5
1920				17.4	6.2		23.6	2.7		16.8
1921				25.0	9.4		34.4	1.6		24.7
1922				32.4	5.7		38.1	5.8		[c]32.3
1923				48.7	12.5		61.2	2.0		[c]46.2
1924				76.8	15.3		92.1	5.3		[c]72.4
1925				98.6	11.7		110.3	5.0	115	[c]97.9
1926				67.7	18.0		85.7	4.3	90	[c]67.0
1927				122.7	12.0		134.7	2.5	137	[c]119.0
1928				102.1	13.2		115.3	14.2	129	[c]100.6
1929									86	
1930									60	
1931									32	
1932									31	
1933									29	
1934									13	
1935									16	
1936									27	
1937									29	
1938									55	
1939									85	
1940									39	
1941									36	
1942									28	
1943									17	
1944									36	
1945									16	
1946									1	
1947									2	
1948									1	
1949									3	
1950									4	
1951									2	
1952									3	
1953									5	
1954									5	
1955									5	
1956									8	
1957									6	

MC-23, Worksheet 2, SOURCES

COL. A
1895-97. *Min. Resources 1897*, Vol. I, p. 207. Quantity figures are not given prior to 1895, but the value figures are so small (from $13,392 to $508,090) that the quantities can be assumed to be negligible. For 1896 and 1897 the source notes "Part of this is foreign lead returned by collectors of customs by mistake as domestic lead."

COL. B
1900-09. *Min. Resources 1909*, Part I, p. 195 (source cited as Bureau of Statistics).
1910-14. *Min. Resources 1917*, Part I, p. 895 (source is cited as Bureau of Foreign and Domestic Commerce).

COL. C, Same as Col. B.

COL. D
1900-09. Same as Col. B.
1910-17. *Min. Resources 1917*, Part I, p. 895 (source cited as Bureau of Foreign and Domestic Commerce). Includes lead in ore and in base bullion.
1918-20. *Min. Resources 1920*, Part I, p. 93.
1921-28. *Min. Resources 1928*, Part I, p. 635 (presumably calendar years).

COL. E
1900-09. Same as Col. B.
1910-17. *Min. Resources 1917*, Part I, p. 895.
1918. *Min. Resources 1920*, Part I, p. 93.
1919-28. *Min. Resources 1928*, Part I, p. 635 (presumably calendar years).

COL. F
1900-09. Same as Col. B.
1910-17. *Min. Resources 1917*, Part I, p. 895.

COL. G, Sum of Cols. B through F.

COL. H
Prior to 1914. Practically zero, as foreign price lower than U.S.: *Min. Resources 1920*, Part I, p. 894.
1914-18. *Min. Resources 1920*, Part I, p. 92.
1919-28. *Min. Resources 1928*, Part I, p. 635.

COL. I
1925-50. *Mineral Facts & Prob.*, p. 436.
1951-55. *Min. Yearbook 1955*, Vol. I, p. 663.
1956-57. *Min. Yearbook 1957*, Vol. I, p. 714.

COL. J
1895. *Stat. Abstract 1897*, p. 218 (year ending June 30).
1896-1905. *Stat. Abstract 1905*, p. 345, "Pigs, bars, old, and other in ore and base bullion" (years ending June 30).
1907-11. *Stat. Abstract 1911*, p. 483, "Lead in ore, bullion, etc." (years ending June 30).
1912-15. *Stat. Abstract 1916*, p. 485, "Foreign merchandise exported: Lead, total" (years ending June 30).
1916-20. *Stat. Abstract 1921*, p. 543 (calendar years).
1921-25. *Stat. Abstract 1925*, p. 536 (calendar years).
1926-28. *Stat. Abstract 1929*, p. 531 (calendar years).

MC-23, Worksheet 2, NOTES

* Less than 50 tons.
[a] 6 months only, July-December.
[b] Assumed zero.
[c] "Other lead manufactures" in addition to those classified as domestic and foreign are given as follows (in 1,000 tons):

1922	4.5	1925	7.5
1923	4.2	1926	12.7
1924	8.0	1927	4.9
		1928	7.5

COLS. A-H, 1900-1909. From *Min. Resources 1909*, Part I, p. 194: "Domestic lead exports should be expected only under . . . very unusual circumstances. . . . The table of exported lead and manufactures of lead of domestic production . . . heretofore published in this report, must be duplicated in part if not completely in the following table of exports of manufactures with benefit of drawback. For this reason it has been decided to abandon the table of domestic exports, as previously published."

COL. G vs. Col. J. It appears that the sum of Cols. A through F may be more inclusive; and its sum (Col. G) added to domestic exports (Col. H) coincides with the Bureau of Mines series in *Mineral Facts & Prob. 1956* (Col. H). Therefore, we choose Col. G for our final series (Table MC-23, Col. D).

MC-24. LEAD (PRIMARY): Consumption

	Burns, consumption (1000 tons)	Min. Facts and ABMS, primary consumption (1000 tons)	Ratios	PMPC, consumption ($ mil., 1935-39 prices)	Col. D / Col. H	Apparent consumption (1000 tons)	Consumption of primary and secondary (1000 tons)	Preferred series, consumption of primary (1000 tons)
	A	B	C	D	E	F	G	H
1870	60.8					63		64
1871	70.7					67		74
1872	75.2					65		79
1873	88.1					80		93
1874	82.5					74		87
1875	78.0					76		82
1876	74.3					70		78
1877	89.2					87		94
1878	94.4					93		99
1879	93.4					92		98
1880	101					100		106
1881	119					116		125
1882	136					133		143
1883	146					143		154
1884	141					138		148
1885	132					129		139
1886	144					137		152
1887	149					146		157
1888	153					149		161
1889	159					154		167
1890	152					155		160
1891	180					196		190
1892	182					197		192
1893	166					191		175
1894	192					191		202
1895	241					239		254
1896	214					206		225
1897	219					226		231
1898	228					215		240
1899	226					208		238
1900	269			16.4	58.0	259		283
1901	272			16.2	56.6	269		286
1902	332			17.3	49.4	292		350
1903	300			18.8	59.5	301		316
1904	320			19.4	57.6	323		337
1905	347			20.7	56.7	341		365
1906	376			23.0	58.1	367		396
1907	391			22.2	53.9	372		412
1908	319			19.6	58.3	338		336
1909	369			23.5	60.4	376		389
1910	379			23.1	57.9	405		399
1911	385			25.3	62.5	368		405
1912	388			25.5	62.3	401		409
1913	420			28.2	63.8	415		442
1914	452			25.8	54.2	451		476
1915	430			26.2	59.3	428		442
1916	461			28.9	59.6	472		485
1917	516			33.0	60.8	527		543
1918	543			29.6	51.7	534		572
1919	434			25.1	54.9	442		457
1920	538			33.1	58.4	548		567
1921	445			28.3	60.3	436		469
1922	493			30.7	59.2	503		519
1923	574		Col. B / Col. A	32.3	53.5	616		604
1924	603			36.7	57.8	607		635
1925	656	688	1.049	40.1	58.3	660	915	688
1926	718	755	1.052	42.2	55.9	736	1032	755
1927	663	695	1.048	40.4	58.1	690	971	695
1928	658	702	1.067	39.0	55.6	651	1011	702
1929	693	727	1.049	38.8	53.4	700	1038	727
1930		575		33.4	58.1	590	834	575
1931		399	Col. B / Col. F	23.9	59.9	410	634	399
1932		275		17.4	63.3	257	473	275
1933		313	1.32	16.3	52.1	238	538	313
1934		333	1.11	17.2	51.7	300	541	333
1935		389	1.22	19.5	50.1	318	659	389
1936		490	1.28	21.3	43.5	384	753	490
1937		551	1.22	26.6	48.3	453	826	551
1938		400	1.18	20.7	51.8	339	625	400
1939		a		25.0	50	421	667	500
1940		a		32.5	41	671	782	800
1941		a		50.9	52	812	1050	970
1942		a		58.9	53	928	1043	1110
1943		a		45.2	53	706	1113	850
1944		a		42.5	52	673	1119	810
1945		a		41.4	54	638	1051	760
1946		542	1.20	27.1	50.0	452	956	542
1947		744	1.23	35.1	47.2	604	1172	744
1948		745	1.09	41.8	56.1	682	1134	745
1949		579	.73	47.6	82.2	795	958	579
1950		885	.93	57.6	65.1	953	1238	885
1951		678	1.13			599	1185	678
1952		782	.78			1008	1131	782
1953		784	.90			875	1202	784
1954		763	1.00			760	1095	763
1955		810				778	1213	810
1956		743				821	1210	743
1957		702				873	1138	702

MC-24, SOURCES

COL. A. Arthur F. Burns, *Production Trends in the U.S. since 1870* (National Bureau of Economic Research, New York, 1934), p. 294, Table 44(52), lead consumption.

COL. B

1925-53. *Mineral Facts & Prob. 1956*, p. 420, "Primary consumption, U.S."

1954-57. American Bureau of Metal Statistics, *1957 Yearbook*, p. 42.

COL. C, Ratio, Col. B/Col. A and Col. B/Col. F.

COL. D, Pres. Materials Policy Comn., Vol. II, p. 181, "Physical volume of consumption of lead."

COL. E, Ratio, Col. D/Col. H, times 1000.

COL. F, Apparent consumption of primary lead. Output (Table MO-14, Col. D) plus net imports (Table MC-23, Col. I).

COL. G, Consumption of primary and secondary lead

1925-52. *Mineral Facts & Prob. 1956*, p. 436, "Lead distribution: consumption."

1953-57. *Min. Yearbook 1957*, Vol. I, p. 692, "Consumption of primary and secondary lead."

COL. H, Preferred series

1870-1924. Col. A times the average of the ratios in Col. C (1.053).

1925-38. Col. B, transcribed.

1939-45. Col. F times 1.2 (approximate average ratio of Col. B/Col. F in 1935-38 and 1946-47).

1946-57. Col. B, transcribed.

MC-24, NOTES

[a] "Comprehensive data not available."

COL. A. "Source: W. R. Ingalls, *Lead and Zinc in the U.S.* (Hill Publishing Co., 1908), p. 205, for 1870-93; *Mineral Resources* for later years.

"Comments: Prior to 1894, the figures ignore stocks completely. For later years, producers' stocks are taken into account, but not completely, while consumers' stocks are ignored. Secondary lead is excluded. See Ingalls, p. 204; *Mineral Resources 1907*, Part I, pp. 655-6; *1914*, Part I, pp. 820-1; and *1929*, Part I, p. 259." (From Burns, *op. cit.*, p. 335.)

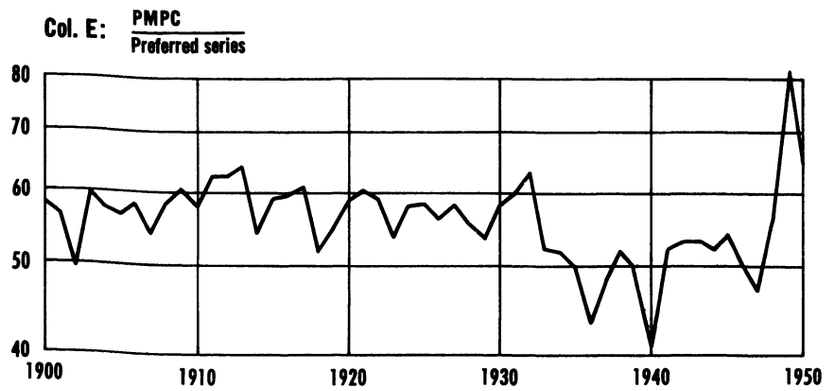
The series, at least in later years, has been derived from production and foreign trade data and is referred to in *Mineral Resources* as "Refined primary pig lead available for consumption."

COL. B. "Sources: *Materials Survey—Lead*, Bureau of Mines and Geological Survey, 1951; *Yearbooks* of American Bureau of Metal Statistics; and various Bureau of Mines data." (Footnote to table in *Mineral Facts & Prob. 1956.*)

It is believed that the difference between this series and the Burns series is due to the inclusion in this series of antimonial lead and lead in pigments derived directly from lead ore, although the Col. B series cannot be reconstructed precisely from data in *Mineral Resources.*

COL. D. The series represents apparent consumption. No explicit series references are given. Its relationship to the preferred series is shown in the chart. There is no readily available explanation for the differences.

COL. F. The differences between this series and the preferred series (Col. H) is partly due to the inclusion of inventory changes in the Col. H series and their omission from Col. F, partly to the omission of antimonial lead and lead pigments made directly from ore, or imported as pigments, from Col. F; and there are probably other differences.



MC-25. ZINC: Net Imports

(thousand tons)

	Bu. of Mines and ABMS, imports	Worksheet 1, imports	Bu. of Mines and ABMS, exports	Worksheet 2, exports	Bu. of Mines, net imports	Preferred series, net imports
	A	B	C	D	E	F
1870		9.4		.8		8.6
1871		9.4		.5		8.9
1872		11.3		.2		11.1
1873		9.0		*		9.0
1874		4.8		.1		4.7
1875		4.7		.1		4.6
1876		2.8		.6		2.2
1877		1.3		1.0		.3
1878		1.3		2.1		-.8
1879		1.3		1.6		-.3
1880		6.1		1.3		4.8
1881		2.8		1.2		1.6
1882		11.4		1.2		10.2
1883		10.2		.5		9.7
1884		3.4		.3		3.1
1885		3.6		.4		3.2
1886		4.1		1.8		2.3
1887		6.7		.3		6.4
1888		2.7		.2		2.5
1889		2.6		1.7		.9
1890		2.5		5.3		-2.8
1891		1.6		7.6		-6.0
1892		1.2		7.1		-5.9
1893		1.9		3.7		-1.8
1894		1.6		1.8		-.2
1895		2.2		1.5		.7
1896		2.4		12.1		-9.7
1897		3.9		22.1		-18.2
1898		2.8		20.5		-17.7
1899		2.7		30.8		-28.1
1900		2.0		58.2		-56.2
1901		1.9		40.9		-39.0
1902		2.1		54.9		-52.8
1903		1.9		40.8		-38.9
1904		2.3		47.1		-44.8
1905		9.1		40.8		-31.7
1906		21.5		56.7		-35.2
1907		37.8		38.1		-.3
1908		21.2		42.8		-21.6
1909		50.3		32.1		18.2
1910		27.2		36.0		-8.8
1911		18.1		38.3		-20.2
1912		31.3		40.3		-9.0
1913		22.3		34.5		-12.2
1914		16.1		93.4		-77.3
1915		54.1		151		-96.9
1916		135		212		-77.0
1917		71.5		231		-160
1918		23.2		112		-88.8
1919		17.2		148		-131
1920		27.7		98.4		-70.7
1921		16.7		6.1		10.6
1922		3.9		45.0		-41.1
1923		3.6		66.0		-62.4
1924		5.4		90.8		-85.4
1925	12	12.7	157	166	-145	-153
1926	13	13.4	140	152	-127	-139
1927	9	9.4	96	107	-87	-97.6
1928	2	2.7	38	49.4	-36	-46.7
1929	13	13.7	24	38.6	-11	-24.9
1930	23	23.2	11	19.4	12	3.8
1931	1	2.2	5	9.3	-4	-7.1
1932	2	4.0	11	12.0	-9	-8.0
1933	4	5.8	7	7.2	-3	-1.4
1934	14	14.9	13	14.1	1	.8
1935	11	15.0	8	9.3	3	5.7
1936	12	12.6	7	7.6	5	5.0
1937	47	47.6	8	10.9	39	36.7
1938	23	23.9	8	9.0	15	14.9
1939	62	63.4	14	16.7	48	46.7
1940	170	170	90	92.6	80	77.4
1941	281	281	97	104	184	177
1942	353	353	140	145	213	208
1943	519	519	106	111	413	408
1944	429	429	26	30.3	403	399
1945	430	430	14	20.0	416	410
1946	339	340	62	70.3	277	270
1947	330	330	120	136	210	194
1948	328	328	77	83.7	251	244
1949	336	336	71	74.9	265	261
1950	396	400	26	27.9	370	372
1951	345	354	52	58.1	293	296
1952	498	501	66	71.9	432	429
1953	671	679	27	28.4	644	652
1954	544	547	46	48.7	498	500
1955	602	605	43	45.9	559	559
1956	692	695	29	30.8	663	664
1957	715	720	20	23.8	695	696

MC-25, SOURCES

COL. A

1925-50. *Mineral Facts & Prob. 1956*, p. 994, "Zinc imports."

1951-57. American Bureau of Metal Statistics, *1957 Yearbook*, p. 80.

COL. B, Total imports of zinc. Worksheet 1 of this table, Col. J.

COL. C

1925-53. *Mineral Facts & Prob.*, p. 994, "Zinc exports."

1954-57. American Bureau of Metal Statistics, *1957 Yearbook*, p. 81.

COL. D, Total exports of zinc. Worksheet 2 of this table, Col. E.

COL. E, Bureau of Mines, net imports. Col. A minus Col. C.

COL. F, Preferred series, net imports. Col. B minus Col. D.

MC-25, NOTES

* Less than 50 tons.

COL. A. *Mineral Facts and Problems* reports that imports have been "factored as follows: 100 per cent of the metal is added to 85 per cent of the zinc content of ores and concentrates." It is not clear what kind of imports are meant, nor what is included. An attempt to reconstruct the tables indicates that the series includes ore and metals "imported for immediate consumption plus material entering country under bond" and "imports for consumption" of zinc dust, old, dross, and skimmings. Imports of zinc pigments are not included.

COL. C. Exports have been "factored as follows: 100 per cent of the metal is added to 85 per cent of the zinc content of ores and concentrates." Includes exports of zinc dross.

COL. F. There is perhaps a slight tendency to overstate net imports here, because our imports series (Worksheet 1, below) may be more inclusive than our exports series (Worksheet 2).

The import figures for zinc ore are not "imports for consumption" as are the other zinc figures but "general imports," which includes entries for warehouse.

Lithopone is not included in our figures; nor are other pigments and manufactured products (except zinc oxide).

Items containing some zinc (pigments, brass, etc.) are counted in some series and not in others; moreover, there are varying estimates of the percent of zinc in ore, pigments, etc.

There is difficulty in the classification of import data as between "general imports" and "imports for consumption." The former includes imports (of ore, etc.) for processing and re-export; the latter presumably includes only imports for immediate shipment to domestic users plus materials released from bonded warehouses for domestic use. However, the Census report (*Quarterly Summary of Foreign Commerce of the U.S.*, June 1953, first page) states that "Imports for consumption consist of . . . and imported ores and crude metals which have been processed in bonded smelting warehouse, withdrawn for consumption *or for exportation*" (italics ours). Thus, even "imports for consumption" data may include some re-exports. And in many years only "general imports" data are available (see source notes in Worksheets 1 and 2). Despite the difficulties, it is believed these data are a fair representation of trend, adequate for estimating consumption (Table MC-26).

MC-25, WORKSHEET 1. ZINC: Imports

(thousand tons)

	Blocks, pigs, or sheets and old	Zinc oxide imports, 80% zinc	Dust	Zinc content of brass (1/3 of wt.)	Zinc content of ore	Total ore	Col. E / Col. F	Col. F × average of ratios in Col. G (0.375)	Ore, 85% of zinc content (Col. E or H × .85)	Total imports (Cols. A+B+C+D+I)
	A	B	C	D	E	F	G	H	I	J
1870	9.4									9.4
1871	9.4									9.4
1872	11.3									11.3
1873	9.0									9.0
1874	4.8									4.8
1875	4.7									4.7
1876	2.8									2.8
1877	1.3									1.3
1878	1.3									1.3
1879	1.3									1.3
1880	6.1									6.1
1881	2.8									2.8
1882	11.4									11.4
1883	10.2									10.2
1884	3.4									3.4
1885	2.7	.9								3.6
1886	2.7	1.4								4.1
1887	4.7	2.0								6.7
1888	2.1	.6								2.7
1889	1.5	1.1								2.6
1890	1.4	1.1								2.5
1891	.4	1.2								1.6
1892	.2	1.0								1.2
1893	.2	1.7								1.9
1894	.2	1.4								1.6
1895	.4	1.8								2.2
1896	.5	1.9								2.4
1897	1.5	2.4								3.9
1898	1.4	1.4								2.8
1899	1.5	1.2								2.7
1900	1.0	1.0								2.0
1901	.4	1.5								1.9
1902	.7	1.4								2.1
1903	.5	1.4								1.9
1904	.4	1.1				2.3		.9	.8	2.3
1905	.5	1.5				22.1		8.3	7.1	9.1
1906	1.1	1.8	.9[a]			55.4		20.8	17.7	21.5
1907	1.9	2.2	.9			103		38.6	32.8	37.8
1908	.8	1.9	1.3			53.8		20.2	17.2	21.2
1909	9.8	2.6	1.3			115		43.1	36.6	50.3
1910	1.5	2.6	1.5		25.4	72.6	.350		21.6	27.2
1911	.7	2.2	1.7		15.9	39.1	.407		13.5	18.1
1912	11.6	2.3	2.7		17.3	43.9	.394		14.7	31.3
1913	5.7	2.7	2.4		13.5	31.4	.430		11.5	22.3
1914	.9	2.1	2.0	.8	12.1	32.0	.378		10.3	16.1
1915	.9	.7	.7	2.8	57.7	159	.363		49.0	54.1
1916	.7	.4	.5	7.6	148	386	.383		126	135
1917	.4	.1	.2	9.2	72.5	212	.342		61.6	71.5
1918	*	.1		2.0	24.8	70.9	.350		21.1	23.2
1919	.1	.1		2.6	17.0	48.6	.350		14.4	17.2
1920	*	1.2		7.4	22.5				19.1	27.7
1921	13.3	1.1			2.7				2.3	16.7
1922	.1	2.2			1.9				1.6	3.9
1923	*	.9			3.2				2.7	3.6
1924	.1	1.4			4.6				3.9	5.4
1925	.1	1.1			13.5				11.5	12.7
1926	*	1.0			14.6				12.4	13.4
1927	.1	1.2			9.5				8.1	9.4
1928	.1	1.2			1.7				1.4	2.7
1929	.4	1.1			14.4				12.2	13.7
1930	.4	.9			25.8				21.9	23.2
1931	.3	1.2			.8				.7	2.2
1932	.3	2.1			1.9				1.6	4.0
1933	2.0	2.0			2.1				1.8	5.8
1934	1.7	1.0			14.3				12.2	14.9
1935	4.5	1.6			10.5				8.9	15.0
1936	11.8	.6			.2				.2	12.6
1937	39.5	.6			8.8				7.5	47.6
1938	7.6	.5			18.6				15.8	23.9
1939	31.5	1.2			36.1				30.7	63.4
1940	17.0	.3			180				153	170
1941	35.2	.1			289				246	281
1942	40.4	*			368				313	353
1943	61.4	*			539				458	519
1944	69.2	*			423				360	429
1945	105	*			382				325	430
1946	109	*			272				231	340
1947	77.3	.1			298				253	330
1948	104	*			264				224	328
1949	131	.2			241				205	336
1950	159	4.1			279				237	400
1951	94.8	1.4			303				258	354
1952	119	.1			450				382	501
1953	242	.9			514				437	679
1954	158	1.9			455				387	547
1955	196	2.7			478				406	605
1956	246	2.9			525				446	695
1957	269	4.2			526				447	720

MC-25, Worksheet 1, SOURCES

COL. A

1870-1900. *Min. Resources 1900,* pp. 219-220, "Zinc imported and entered for consumption in the U.S., blocks or pigs" plus "sheets" plus "old" (converted from lb. to tons); 1892-1900 includes scrap.

1901. *Min. Resources 1905,* p. 374, same as above.

1902-17. *Min. Resources 1917,* Part I, p. 871, as above.

1918-21. *Min. Resources 1921,* Part I, p. 100A, as above plus "dust."

1922-54. *Metal Stat. 1955,* p. 571, "Imports of zinc, blocks, pigs, slabs" plus "zinc dust" plus "scrap" plus "dross and skimmings."

1955-57. *Metal Stat. 1958,* p. 558.

COL. B

1885-1900. *Min. Resources 1900,* p. 220, "Imports of zinc oxide, dry" plus "in oil" times .80 (to derive zinc content).

1901-09. *Min. Resources 1909,* Part I, p. 213, as above.

1910-17. *Min. Resources 1917,* Part I, p. 871, as above.

1918-21. *Min. Resources 1921,* Part I, p. 57, as above.

1922-29. *Min. Resources 1929,* Part I, p. 521, as above.

1930-35. *Min. Yearbook 1936,* p. 192, "Zinc pigments and salt imported for consumption in the U.S., Zinc oxide, dry" plus "in oil."

1936-40. *Min. Yearbook Review of 1940,* p. 174, as above.

1941-45. *Min. Yearbook 1945,* p. 219, as above.

1946-49. *Min. Yearbook 1949,* p. 710, as above.

1950-54. *Min. Yearbook 1954,* Vol. I, chapter on lead and zinc pigments and zinc salts, Table 20, as above.

1955-57. *Min. Yearbook 1957,* Vol. I, Table 18, p. 740, "Zinc oxide" times .80.

COL. C

1906-09. *Min. Resources 1909,* Part I, p. 212, "Imports of zinc dust from Germany into the U.S., quantity."

1910-17. *Min. Resources 1917,* Part I, p. 871, "Zinc dust, zinc oxide, and lithopone imported and entered for consumption in the U.S.: Zinc dust."

COL. D, *Min. Resources 1920,* Part I, p. 231, "General imports of old brass fit only for remanufacture, quantity." (Zinc content; average composition about ⅓ zinc and ⅔ copper.)

COL. E

1910-19. *Min. Resources 1921,* Part I, p. 28, "General imports of zinc ore into the U.S., total, zinc content."

1920-54. *Metal Stat. 1955,* p. 571, "Imports of zinc, zinc content" entered for consumption plus entries under bond.

1955-57. *Metal Stat, 1958,* p. 558.

COL. F, *Min. Resources 1921,* Part I, p. 28, "General imports of zinc ore into the U.S., total, ore."

COL. G, Ratio, Col. E/Col. F.

COL. H, Col. F times the average of the ratios in Col. G (ratio, 0.375).

COL. I, Col. E or Col. H times .85 (85% recoverable, of zinc content of ore).

COL. J, Total imports. Sum of Cols. A through D and I.

MC-25, Worksheet 1, NOTES

* Less than 50 tons.

[a] March-December.

MC-25, WORKSHEET 2. ZINC: Exports

(thousand tons)

	Ore, 85% of content	Plates, sheets, pigs, or bars + dross	Zinc oxide (80% zinc)	Zinc content of brass (30%)	Total exports, sum of Cols. A-D
	A	B	C	D	E
1870	.7	.1			.8
1871	.5	*			.5
1872	.2	*			.2
1873	*	*			*
1874	.1	*			.1
1875	.1	*			.1
1876	.5	.1			.6
1877	.3	.7			1.0
1878	.8	1.3			2.1
1879	.5	1.1			1.6
1880	.6	.7			1.3
1881	.5	.7			1.2
1882	.5	.7			1.2
1883	.1	.4			.5
1884	.2	.1			.3
1885	.3	.1			.4
1886	1.3	.5			1.8
1887	.2	.1			.3
1888	.2	*			.2
1889	1.3	.4			1.7
1890	3.7	1.6			5.3
1891	5.5	2.1			7.6
1892	.9	6.2			7.1
1893	.1	3.7			3.7
1894	*	1.8			1.8
1895	*	1.5			1.5
1896	2.0	10.1			12.1
1897	7.9	14.2			22.1
1898	10.0	10.5			20.5
1899	24.0	6.8			30.8
1900	35.8	22.4			58.2
1901	37.5	3.4			40.9
1902	47.4	3.2	4.3		54.9
1903	33.5	1.5	5.8		40.8
1904	30.5	10.1	6.5		47.1
1905	26.3	5.5	9.0		40.8
1906	23.6	20.6	12.5		56.7
1907	17.3	10.2	10.6		38.1
1908	22.2	11.0	9.6		42.8
1909	10.6	9.6	11.9		32.1
1910	16.8	8.7	10.5		36.0
1911	15.5	11.1	11.7		38.3
1912	19.8	6.8	13.7		40.3
1913	15.1	7.8	11.6		34.5
1914	9.4	67.3	12.5	4.2	93.4
1915	.7	123	16.0	11.6	151
1916	.1	163	11.2	37.7	212
1917	1.1	167	12.4	50.5	231
1918	.1	96.1	9.9	5.4	112
1919	0	135	11.8	1.4	148
1920	0	88.3	8.9	1.2	98.4
1921	0	4.1	2.0		6.1
1922	1.4	40.4	3.2		45.0
1923	12.5	49.5	4.0		66.0
1924	9.2	78.5	3.1		90.8
1925	58.6	98.8	8.7		166
1926	81.0	59.1	11.7		152
1927	39.7	55.4	11.6		107
1928	3.8	33.8	11.8		49.4
1929	.1	24.4	14.1		38.6
1930	0	10.8	8.6		19.4
1931	*	5.2	4.1		9.3
1932	0	11.0	1.0		12.0
1933	.7	5.9	.6		7.2
1934	3.1	10.1	.9		14.1
1935	.4	8.0	.9		9.3
1936	.2	6.3	1.1		7.6
1937	.3	8.2	2.4		10.9
1938	.1	8.0	.9		9.0
1939	.3	13.6	2.8		16.7
1940	.4	89.6	2.6		92.6
1941	0	97.5	6.6		104
1942	*	140	4.8		145
1943	*	106	4.8		111
1944	*	25.9	4.4		30.3
1945	*	14.3	5.7		20.0
1946	.1	61.4	8.8		70.3
1947	1.2	119	15.3		136
1948	3.0	73.8	6.9		83.7
1949	2.5	68.4	4.0		74.9
1950	1.0	24.4	2.5		27.9
1951	2.6	48.4	7.1		58.1
1952	2.9	62.9	6.1		71.9
1953	2.5	23.5	2.4		28.4
1954	[a]	46.2	2.5		48.7
1955	[a]	43.8	2.1		45.9
1956	.7	28.6	2.2		30.8
1957	*	20.3	2.5		23.8

MC-25, Worksheet 2, SOURCES

COL. A

1870-1900. *Min. Resources 1900,* p. 221, "Exports of zinc and zinc ore of domestic production, ore or oxide, quantity" times .0560 to convert from hundredweights (112 lb.) to short tons; times .85 to approximate recoverable zinc content.

1901. *Min. Resources 1905,* p. 375, "Exports of zinc and zinc ore of domestic production, ore or oxide" times .85.

1902-17. *Min. Resources 1917,* Part I, p. 874, "Zinc ore, quantity" times .85.

1918-19. *Metal Stat. 1930,* p. 415, "Exports of domestic zinc, zinc ore" times .85.

1920-54. *Metal Stat. 1955,* p. 573, "Exports of zinc from the U.S., zinc ore" times .85.

1955-57. *Metal Stat. 1958,* p. 559, "Exports of zinc" etc. times .85.

COL. B

1870-1900. *Min. Resources 1900,* p. 221, "Plates, sheets, pigs, or bars, quantity" times .0005 to convert from pounds to short tons.

1901. *Min. Resources 1905,* p. 375, "Plates, sheets, pigs, or bars."

1902-17. *Min. Resources 1917,* Part I, p. 874, same as above.

1918-19. *Metal Stat. 1930,* p. 415, "Pigs, slabs, etc.," plus "sheets, strips" plus "dust" plus "dross."

1920-54 (except 1941-45). *Metal Stat. 1955,* p. 573, "Slab zinc; sheets, strips, etc., dust, dross."

1941-45. *Min. Yearbook 1945,* p. 195.

1955-57. *Metal Stat. 1958,* p. 559, "Slab zinc; sheets" etc.

COL. C.

1902-17. *Min. Resources 1917,* Part I, p. 874, "Zinc oxide exported from the U.S., quantity" times .80 (for zinc content).

1918-20. *Min. Resources 1920,* Part I, p. 450, same as above.

1921-30. *Min. Resources 1930,* Part I, p. 129, as above.

1931-35. *Min. Yearbook 1936,* p. 192, "Zinc pigments and salts exported from the U.S., zinc oxide" times .80.

1936-40. *Min. Yearbook Review of 1940,* p. 174, as above.

1941-45. *Min. Yearbook 1945,* p. 219, as above.

1946-49. *Min. Yearbook 1949,* p. 710, as above.

1950-54. *Min. Yearbook 1954,* Vol. I, chapter on lead and zinc pigments and zinc salts, Table 22, as above.

1955-57. *Min. Yearbook 1957,* Vol. I, chapter on lead and zinc pigments and zinc salts, Table 20, p. 740, times .80.

COL. D, *Min. Resources 1920,* Part I, p. 233, "Domestic brass and brass manufactures exported from the U.S., bars, plates, and sheets" plus "scrap and old" (zinc content approximately 30% by weight).

COL. E, Total exports. Sum of Cols. A through D.

MC-25, Worksheet 2, NOTES

* Less than 50 tons.

[a] Not separately classified.

MC-26. ZINC: Consumption

	Bu. of Mines, total distrib., minus exports (1000 tons)	PMPC, physical volume of consumption (mil. 1935-39 dollars)	Burns, consumption (1000 tons)	Col. F / Col. C	Col. F / Col. A	Preferred series, output plus net imports (1000 tons)
	A	B	C	D	E	F
1870						8.6
1871						8.9
1872						11.1
1873			16.3	1.15		18.8
1874			14.8	1.22		18.1
1875			20.5	1.26		25.8
1876			18.7	1.26		23.6
1877			18.1	1.31		23.7
1878			18.9	1.30		24.6
1879			21.2	1.31		27.8
1880			28.6	1.31		37.6
1881			32.0	1.29		41.4
1882			44.4	1.21		53.9
1883			46.6	1.25		58.3
1884			41.9	1.30		54.3
1885			43.3	1.35		58.3
1886			44.9	1.38		62.0
1887			54.9	1.35		74.1
1888			57.9	1.34		77.7
1889			60.0	1.28		76.7
1890			67.1	1.20		80.6
1891			78.5	1.22		96
1892			78.0	1.38		108
1893			72.8	1.39		101
1894			72.4	1.35		97.7
1895			87.7	1.30		114
1896			70.1	1.27		88.8
1897			88.8	1.23		109
1898			108.2	1.20		130
1899			124.6	1.12		140
1900		6.7	99.4	1.14		113
1901		8.9	141.7	1.04		147
1902		9.2	152.7	1.02		155
1903		10.3	154.4	1.15		177
1904		12.1	180.9	1.11		200
1905		14.8	200.4	1.18		236
1906		14.5	220.8	.906		200
1907		16.0	227.0	1.11		253
1908		14.4	214.2	.990		212
1909		19.9	270.7	1.18		320
1910		19.7	245.9	1.29		316
1911		19.7	280.1	1.11		312
1912		24.0	340.3	1.10		376
1913		25.6	295.4	1.36		401
1914		23.0	300.0	1.13		338
1915		32.7	364.9	1.35		491
1916		39.4	459.3	1.36		626
1917		36.7	413.6	1.34		554
1918		35.4	423.8	1.29		547
1919		25.9	324.0	1.29		418
1920		31.1	323.0	1.60		517
1921		18.0	203.6	1.32		268
1922		28.6	373.1	1.16		431
1923		34.8	446.5	1.23		548
1924		35.4	448.3	1.23		553
1925	785	35.3	500.1	1.12	.711	558
1926	856	40.5	557.0	1.14	.742	635
1927	809	40.0	516.4	1.20	.768	621
1928	860	42.9	578.1	1.12	.753	648
1929	883	45.5	568.5	1.23	.792	699
1930	635	37.5			.943	599
1931	513	26.1			.786	403
1932	369	18.4			.751	277
1933	495	24.8			.774	383
1934	502	28.3			.876	440
1935	632	33.9			.829	524
1936	771	37.6			.754	581
1937	823	42.4			.806	663
1938	566	33.6			.940	532
1939	857	41.3			.736	631
1940	985	44.5			.753	742
1941	1175	59.2			.788	926
1942	1110	67.1			.879	976
1943	1244	79.8			.926	1152
1944	1320	75.5			.847	1118
1945	1283	66.6			.798	1024
1946	1180	52.0			.716	845
1947	1173	54.7			.709	832
1948	1203	52.8			.727	874
1949	975	51.6			.876	854
1950	1350	64.4			.737	995
1951	1326				.737	977
1952	1212				.903	1095
1953	1342				.893	1199
1954	1181				.820	968
1955	1469				.731	1074
1956	1323				.912	1206
1957	1232				.997	1228

MC-26, SOURCES

COL. A

1925-53. *Mineral Facts & Prob. 1956*, p. 994, "Total distribution" minus "Exports."

1954-57. *Min. Yearbook 1957*, Vol. I, p. 1283, "Total consumption."

COL. B. Pres. Materials Policy Comn., Vol. II, p. 181, "Physical volume of consumption of zinc."

COL. C, Arthur F. Burns, *Production Trends in the U. S. Since 1870* (National Bureau of Economic Research, New York, 1934), p. 298, "Zinc Consumption."

COL. D, Ratio, Col. F/Col. C.

COL. E, Ratio, Col. F/Col. A.

COL. F, Preferred series. Table MO-15, Col. H, plus Table MC-25, Col. F.

MC-26, NOTES

Mineral Facts & Prob. 1956 gives as its source "National Security Resources Board, Materials Survey—Zinc, 1951, and various Bureau of Mines data." The figures are apparently based on estimates of industrial use. Cols. B and F are estimates of apparent consumption derived from production and foreign trade data. No information is readily available on Col. B source.

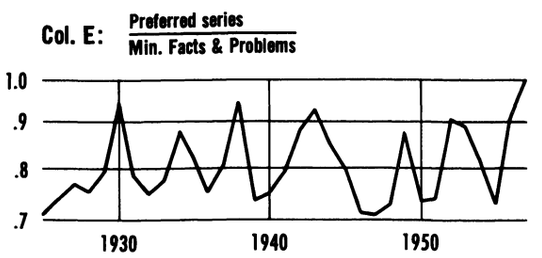
COL. A includes consumption of secondary zinc, and Cols. B and C include primary zinc only.

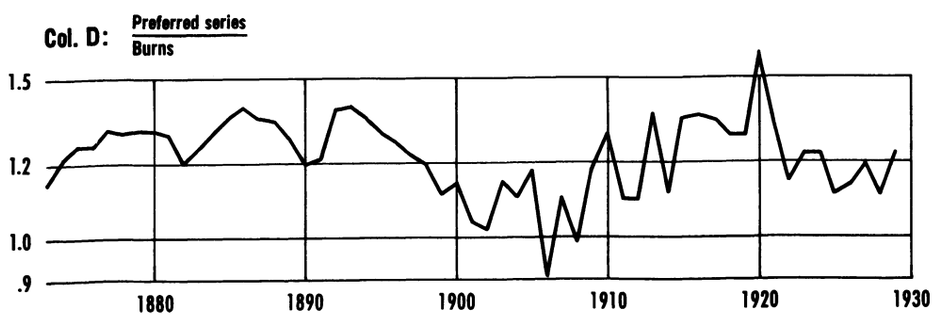
The Burns series (Col. C) gives as its source, "W. R. Ingalls, *Lead and Zinc in the U. S.* (Hill Publishing Co., 1908), p. 337 for 1873-94; *Mineral Resources* for later years." Burns also makes the following coments: "Prior to 1895, the figures ignore stocks completely. In later years, smelter stocks are taken into account, but not consumers' stocks. Secondary zinc is excluded. See Ingalls, pp. 337-8; *Mineral Resources, 1929*, Part I, p. 720 and *ibid., 1914*, Part I, pp. 908-9."

As the charts indicate, there are considerable differences among series on zinc consumption.

Our series moves with about the same trend as Burns' series for 1873-1929, though with a dip about 1900-10 (see chart for Col. D), and with a level about 20% higher than Burns. The trend is nearly identical with that in *Mineral Facts & Prob.* for 1925-53, but the level is about 20% lower.

The differences arise presumably because of differences in coverage of pigments, scrap, re-exports, etc. (Cf. notes to Table MC-25.) Clearly our indicators on foreign trade and consumption must be interpreted with great caution for movements or differences less than 30%.





MC-27. BAUXITE: Net Imports and Consumption

(thousand long tons)

	Imports	Exports	Net imports (Col. A minus Col. B)	Output	Apparent consumption (Col. C plus Col. D)	Actual consumption	Col. F / Col. E	Preferred series, consumption
	A	B	C	D	E	F	G	H
1889				1				
1890				2				
1891				4				
1892				11				
1893				9				
1894				11				
1895				17				
1896				18				
1897				21				
1898	1			25				
1899	7			33				
1900	9			23				
1901	18			20				
1902	16			27				
1903	15			45				
1904	15			51				
1905	12			57				
1906	18			71				
1907	25			94				
1908	22			50				
1909	19			132				
1910	16			151				
1911	43			157				
1912	26			161				
1913	21			211				
1914	25			219				
1915	3	16	-13	300	287			287
1916	*	18	-18	425	407			407
1917	8	22	-14	569	555			555
1918	4	20	-16	606	590			590
1919	6	18	-12	377	365			365
1920	43	22	21	521	542			542
1921	28	6	22	140	162			162
1922	24	20	4	310	314			314
1923	119	79	40	523	563			563
1924	202	77	125	348	473			473
1925	354	79	275	317	592			592
1926	282	88	194	392	586			586
1927	357	122	235	321	556			556
1928	350	113	237	375	612			612
1929	381	134	247	366	613			613
1930	410	105	305	331	636			636
1931	306	88	218	196	414			414
1932	206	28	178	96	274			274
1933	150	22	128	154	282			282
1934	167	64	103	169	272			272
1935	200	103	97	245	342			342
1936	323	106	217	380	597			597
1937	507	154	353	425	778			778
1938	456	72	384	311	695			695
1939	520	65	455	375	830			830
1940	630	103	527	439	966			966
1941	1117	170	947	937	1884	1721	.91	1721
1942	884	294	590	2602	3192	2518	.79	2518
1943	1542	529	1013	6233	7246	4761	.64	4761
1944	556	211	345	2824	3169	3460	1.09	3460
1945	737	156	581	981	1562	2433	1.56	2433
1946	851	128	723	1104	1827	1889	1.03	1889
1947	1842	141	1701	1202	2903	2564	.88	2564
1948	2558	86	2472	1457	3929	2725	.69	2725
1949	2730	58	2672	1149	3821	2678	.70	2678
1950	2538	72	2466	1335	3801	3325	.87	3325
1951	2820	139	2681	1849	4530	3946	.87	3946
1952	3462	63	3399	1667	5066	4228	.83	4228
1953	4230	43	4187	1580	5767	5628	.98	5628
1954	4988	25	4963	1995	6958	6428	.92	6428
1955	4882	22	4860	1788	6648	6989	1.05	6989
1956	5670	23	5647	1744	7391	7751	1.05	7751
1957	7098	95	7003	1416	8419	7633	.91	7633

MC-27, SOURCES

COL. A, Imports
1898-1956. *Hist. Stat. 1960,* series M-250.
1957. *Min. Yearbook 1957,* Vol. I, p. 245.
COL. B, Exports
1915-33. Weight of bauxite and concentrates, as shipped, from:
1915-19. *Min. Resources 1919,* Part I, p. 33.
1920-23. *Min. Resources 1924,* Part I, p. 22A.
1924-27. *Min. Resources 1928,* Part I, p. 424.
1928-31. *Min. Yearbook 1932-33,* p. 214.
1932-34. *Min. Yearbook 1937,* p. 67.
1934-41. *Min. Yearbooks,* bauxite and aluminum chapters, exports as shipped, times 1.25 (this is a rough average of the 1942-46 ratios of "dried bauxite equivalent" to weight "as shipped," as given in *Min. Yearbook 1946,* p. 182). Original data from:
1934. *Min. Yearbook 1937,* p. 671.
1935-38. *Min. Yearbook 1940, Review of 1939,* p. 646.
1939-41. *Min. Yearbook 1943,* p. 694.
1942-57. *Min. Yearbooks,* bauxite chapters, Table on bauxite exported, in long tons, dried bauxite equivalent.
COL. C, Net imports. Col. A minus Col. B.
COL. D, Output. Table MO-16, Col. A (dried bauxite equivalent for 1934-57 only).
COL. E, Apparent consumption. Col. C plus Col. D.
COL. F, Actual consumption. Bauxite chapters in *Min. Yearbook 1945* and following years, "Bauxite consumed in U.S., by industries," dried bauxite equivalent.
COL. G, Ratio, Col. F/Col. E.
COL. H, Preferred series
1915-40. Col. E, transcribed.
1941-57. Col. F, transcribed.

MC-27, NOTES

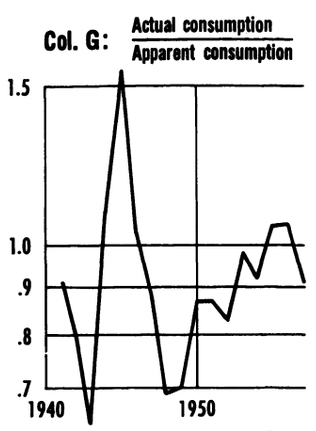
* Negligible quantity.

COL. A. For 1934-57, the data represent "dried bauxite equivalent" as estimated by the Bureau of Mines, for recent years, "by deducting 13.6 per cent free moisture for Jamaican and 14.6 per cent for Haitian bauxite" (*Min. Yearbook 1957,* Vol. I, p. 245, Table 13, fn. 2).

In addition to the imports listed in the table, calcined bauxite was imported as follows (in 1,000 long tons, as given in *Min. Yearbook 1957,* Vol. I, p. 246, Table 14 and footnote):

1951	19	1955	108
1952	31	1956	148
1953	92	1957	67
1954	99		

COL. B. The data refer to exports of domestic ore only. Exports of bauxite were not separately classified by the Bureau of Foreign and Domestic Commerce prior to July 1914. The 1915-33 data are left on a gross weight basis, as are the imports. This may result in overstating net imports, as bauxite imports in recent years weighed *more* than their dried bauxite equivalent, while exports weighed *less.* However, data on actual ratios are unavailable.



COL. H. The Col. G chart shows the difference between actual and apparent consumption. Part of the difference is due to the bauxite sold to national stockpiles. Part is due to changes in stocks, and part due to the fact that actual consumption figures include exports to Canada "inasmuch as virtually all of this bauxite is shipped to American-owned plants in Canada for manufacture into crude abrasives and reimported into the U.S. for final manufacture and consumption."

Apparent consumption figures in some volumes of *Minerals Yearbook* differ from those in Col. E because different estimates of production have been used.

Products of bauxite—aluminum, abrasives, refractory materials, and aluminum salts—have important foreign trade which is not taken into account here. For the aluminum data, see Tables MC-28 and MC-29.

MC-28. ALUMINUM: Net Imports and Consumption

(thousand tons)

	Total imports	Total exports	Net imports	Domestic primary output	Mill shipments	Col. G / Col. E	Preferred series, consumption
	A	B	C	D	E	F	G
1893				0.1			
1894				0.2			
1895				0.3			
1896				0.5			
1897				1.2			
1898				1.5			
1899				1.6			
1900				2.5			
1901				2.9			
1902				2.9			
1903				3.3			
1904				4.1			
1905				5.4			
1906				7.1			
1907				8.2			
1908				5.3			
1909				14.5			
1910				17.7			
1911				19.2			
1912	11.4			20.9			
1913	11.6			23.6			
1914	8.1			29.0			
1915	4.3			45.3			
1916	3.3			57.6			
1917	.03			64.9			
1918	.90	12.1	-11.2	62.4			51.2
1919	6.9	2.5	4.4	64.2			68.6
1920	19.6	4.7	14.9	69.0			83.9
1921	16.3	1.1	15.2	27.3			42.5
1922	22.0	2.4	19.6	36.8			56.4
1923	21.3	3.0	18.3	64.3			82.6
1924	16.0	5.0	11.0	75.3			86.3
1925	21.1	8.1	13.0	70.1			83.1
1926	35.8	4.9	30.9	73.7			105
1927	31.9	8.0	23.9	81.8			106
1928	20.0	8.4	11.6	105.3			117
1929	26.2	9.8	16.4	114.0			130
1930	13.3	9.6	3.7	114.5			118
1931	8.2	3.0	5.2	88.8			94.0
1932	4.8	2.6	2.2	52.4			54.5
1933	8.2	3.1	5.1	42.6			47.7
1934	9.7	4.4	5.3	37.1			42.3
1935	11.3	2.5	8.8	59.6			68.4
1936	14.0	1.2	12.8	112			125
1937	24.1	3.4	20.7	146			167
1938	9.9	6.7	3.2	143			146
1939	15.8	38.4	-22.6	164			141
1940	18.5	30.9	-12.4	206			194
1941	13.6	8.3	5.3	309			314
1942	112	43.6	68	521	631	.93	589
1943	136	125	11	920	978	.95	931
1944	103	208	-105	776	1064	.63	671
1945	341	12.9	328	495	852	.97	823
1946	57.2	20.9	36	410	765	.58	446
1947	31.4	70.7	-39	572	938	.57	533
1948	161	55.3	106	623	1056	.69	729
1949	126	41.8	84	603	755	.91	687
1950	256	24.6	231	719	1128	.84	950
1951	163	16.7	146	837	1136	.87	983
1952	152	12.4	140	937	1222	.88	1077
1953	360	23.0	337	1252	1472	1.08	1589
1954	245	52.9	192	1461	1355	1.22	1653
1955	241	41.3	200	1566	1806	.98	1766
1956	267	72.1	195	1679	1840	1.02	1874
1957	260	67.8	192	1648	1715	1.07	1840

MC-28, SOURCES

COL. A, Total imports

1912-54. U.S. Department of Commerce, Business and Defense Services Administration, *Materials Survey: Aluminum,* Nov. 1956, Table VIII-12, "Total imports."

1955-57. *Min. Yearbooks,* aluminum chapter, Table 9, total, "crude and semi-crude" plus "foil" plus "powder."

COL. B, Total exports

1918-54. USDC, *op. cit.,* Table VIII-13, "Total exports."

1955-57. *Min. Yearbook 1957,* Vol. I, p. 180.

COL. C, Net imports. Col. A minus Col. B.

COL. D, Domestic primary output. Table MO-17, Col. A.

COL. E, Mill shipments

1942-53. USDC, *op. cit.,* Tables VIII-22 and VIII-23, "Mill shipments" (reduced to short tons).

1954-57. *Min. Yearbooks,* aluminum chapter, Table 6, "Net Shipments . . . by producers."

COL. F, Ratio, Col. G/Col. E.

COL. G, Preferred series. Col. C plus Col. D.

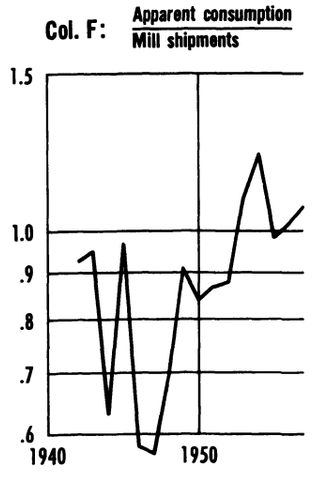
MC-28, NOTES

COL. A. Import data are for general imports for 1912-18 and imports for consumption 1919-57. They include metal and alloy, crude, scrap, plate, sheets, bars, etc., and foil and powder. Scrap is inseparable from other metal imports prior to 1939 and consequently has been left in the series for subsequent years in order to maintain consistency.

COL. B. Exports of aluminum manufactures are not included. The following groups are included: Metals and alloys crude, scrap, plate, sheets, strips, mill shapes, wire and cable, foil, and powder. Scrap is inseparable from other exports prior to 1939.

COL. D. The apparent consumption figures include scrap in foreign trade but exclude scrap in domestic output.

COL. E. No actual consumption figures are available. The data in this column "represent shipments by domestic producers to consuming industries making end products." Shipments to national stockpiles are not included, but shipments of scrap are included.



MC-29. BAUXITE AND ALUMINUM: Consumption

	MC-27, bauxite consumption (1000 long tons)	MC-28, aluminum net imports (1000 tons)	Bauxite equiv. of aluminum net imports (Col. B × 5.1) (1000 long tons)	Preferred series, bauxite & aluminum consumption (1000 long tons of bauxite)
	A	B	C	D
1915	287			
1916	407			
1917	555			
1918	590	-11.2	-57	533
1919	365	4.42	22.5	387
1920	542	14.9	76	618
1921	162	15.2	78	240
1922	314	19.6	100	414
1923	563	18.3	93	656
1924	473	11.0	56	529
1925	592	13.0	66	658
1926	586	30.9	158	744
1927	556	23.9	122	678
1928	612	11.6	59	671
1929	613	16.4	84	697
1930	636	3.70	19	655
1931	414	5.25	27	441
1932	274	2.11	11	285
1933	282	5.14	26	308
1934	272	5.23	27	299
1935	342	8.84	45	387
1936	597	12.8	65	662
1937	778	20.7	106	884
1938	695	3.17	16	711
1939	830	-22.6	-115	715
1940	966	-12.4	-63	902
1941	1721	5.26	27	1748
1942	2518	68.4	349	2867
1943	4761	11	56	4817
1944	3460	-105	-536	2924
1945	2433	328	1673	4106
1946	1889	36.3	185	2074
1947	2564	-39.3	-200	2364
1948	2725	106	539	3264
1949	2678	84.2	429	3107
1950	3325	231	1180	4505
1951	3946	146	746	4692
1952	4228	140	712	4940
1953	5628	337	1719	7347
1954	6428	192	980	7408
1955	6989	200	1020	8009
1956	7751	195	994	8745
1957	7633	192	979	8612

MC-29, SOURCES

COL. A, Bauxite consumption. Table MC-27, Col. H.
COL. B, Aluminum, net imports. Table MC-28, Col. C.
COL. C, Bauxite equivalent of aluminum net imports. Col. B times 5.1 (see note below).
COL. D, Preferred series. Col. A plus Col. C.

MC-29, NOTES

COL. B. These import figures do not include aluminous abrasive materials. Below are the imports and exports of these materials for the years 1955-57 (in short tons) (source, *Min. Yearbook 1957*, Vol. I, pp. 162 and 163).

	Imports	*Exports*	*Net Imports*
1955	151,720	13,350	138,370
1956	156,982	12,656	144,326
1957	192,778	10,946	181,832

COL. C. Bauxite has important uses other than in the making of aluminum—particularly in the making of alumina for abrasives and refractory materials.

The factor for computing bauxite equivalent of net imports of aluminum has been derived from the following factors: 3 net tons of dried bauxite from domestic mines are required to produce one net ton of alumina; 1.9 tons of alumina are required to produce one ton of aluminum (U.S. Dept. of Commerce, Business and Defense Services Administration, *Materials Survey: Aluminum* (Nov. 1956), pp. V-5 and V-6). These factors were multiplied to get net tons of bauxite required for one ton of aluminum, and the product, 5.7, divided by 1.12 to provide an estimate of long tons of bauxite per short ton of aluminum.

MC-30. TIN: Consumption

	Deliveries of primary tin (1000 long tons)	Consumption of primary tin (1000 long tons)	Col. B / Col. A	Apparent consumption (mil. 1935-39 dollars)	Col. H / Col. D	Tin imports (1000 long tons)	Col. H / Col. F	Preferred series, consumption (1000 long tons)
	A	B	C	D	E	F	G	H
1870						3.7		3.5
1871						5.8		5.5
1872						5.9		5.6
1873						5.1		4.8
1874						5.7		5.4
1875						5.1		4.8
1876						4.7		4.5
1877						4.9		4.7
1878						6.5		6.2
1879						7.2		6.8
1880						14.2		13.5
1881						8.5		8.1
1882						9.3		8.8
1883						11.9		11.3
1884						11.6		11.0
1885						10.7		10.2
1886						12.5		11.9
1887						13.2		12.5
1888						14.1		13.4
1889						15.1		14.4
1890						15.6		14.8
1891						17.8		16.9
1892						19.6		18.6
1893						27.3		26.0
1894						7.5		7.1
1895						21.3		20.2
1896						22.3		21.2
1897						22.5		21.4
1898						28.5		27.1
1899						30.1		28.6
1900	28.7			24.5	1.17	31.3	.917	28.7
1901	30.9			26.1	1.18	32.6	.948	30.9
1902	33.9			29.8	1.14	35.4	.958	33.9
1903	37.4			29.1	1.29	39.3	.952	37.4
1904	35.3			29.0	1.22	36.1	.978	35.3
1905	38.6			30.9	1.25	37.9	1.018	38.6
1906	41.2			35.4	1.16			41.2
1907	35.0			28.9	1.21			35.0
1908	33.4			28.9	1.16			33.4
1909	41.5			33.4	1.24			41.5
1910	45.4			36.9	1.23			45.4
1911	44.3			40.7	1.09			44.3
1912	49.5			37.6	1.32			49.5
1913	43.9			40.3	1.09			43.9
1914	41.7			35.3	1.18			41.7
1915	48.8			33.2	1.47			48.8
1916	60.5			57.0	1.06			60.5
1917	62.7			54.4	1.15			62.7
1918	68.2			62.9	1.08			68.2
1919	43.9			80.4	.55			43.9
1920	66.3			67.6	.98			66.3
1921	34.8			29.0	1.20			34.8
1922	66.6			56.3	1.18			66.6
1923	72.8			56.7	1.28			72.8
1924	64.1			50.9	1.26			64.1
1925	76.5			60.1	1.27			76.5
1926	78.0			60.3	1.29			78.0
1927	72.5			55.1	1.32			72.5
1928	78.9			61.1	1.29			78.9
1929	89.1	87.6	.98	67.9	1.29			87.6
1930	78.2	66.0	.84	33.1	1.99			66.0
1931	63.4	56.4	.89	51.8	1.09			56.4
1932	36.3	40.8	1.24	27.3	1.49			40.8
1933	57.8	61.2	1.06	50.0	1.22			61.2
1934	46.2	52.8	1.14	31.4	1.68			52.8
1935	59.1	55.9	.95	50.6	1.10			55.9
1936	74.0	68.2	.92	60.0	1.14			68.2
1937	83.7	72.9	.87	69.4	1.05			72.9
1938	50.7	48.1	.95	39.1	1.23			48.1
1939	71.9	66.6	.93	55.5	1.20			66.6
1940	115.5	72.3	.63	100.4	.72			72.3
1941	143.3	103.1	.72	133.2	.77			103.1
1942	30	56.3	1.88	39.0	1.44			56.3
1943	37	46.2	1.25	26.2	1.76			46.2
1944	53	59.2	1.12	38.1	1.55			59.2
1945	60	55.6	.93	32.5	1.71			55.6
1946	58	54.6	.94	41.5	1.32			54.6
1947	60	59.2	.99	42.3	1.40			59.2
1948	62	59.9	.97	68.1	.88			59.9
1949	45	47.2	1.05	77.5	.61			47.2
1950	85	71.2	.84	85.3	.83			71.2
1951	51	56.9	1.12					56.9
1952	50	45.3	.91					45.3
1953	55	54.0	.98					54.0
1954	54	54.4	1.01					54.4
1955	61	59.8	.98					59.8
1956	61	60.5	.99					60.5
1957	55	54.9	1.00					54.9

MC-30, SOURCES

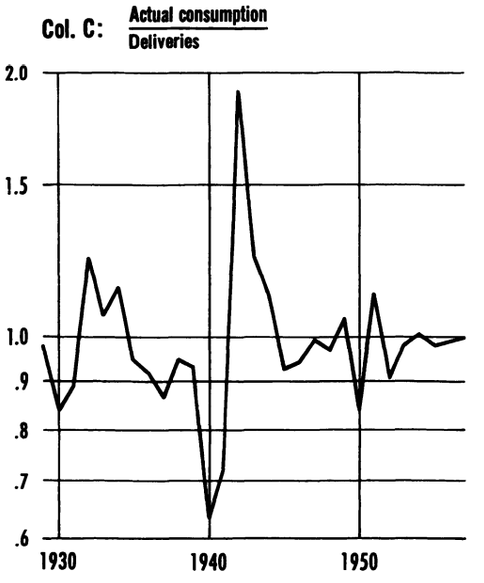
COL. A, *Metal Stat. 1959*, p. 433, deliveries of primary tin.
COL. B
1929-55. *Bus. Stat. 1957*, p. 162, actual consumption of primary tin.
1956-57. American Bureau of Metal Statistics, *1957 Yearbook*, p. 124.
COL. C, Ratio, Col. B/Col. A.
COL. D, Pres. Materials Policy Comn., Vol. II, p. 181, apparent consumption.
COL. E, Ratio, Col. H/Col. D.
COL. F
1870-77. *Stat. Abstract 1878* (converted from cwt. to long tons: factor = 20):
1870-72. p. 77, "Tin in bars, blocks or pigs, cwt."
1873. pp. 77 and 70 (91,166 plus 11,693 = 102,859 cwt.).
1874-77. p. 70.
1878-87. *Stat. Abstract 1887*, p. 84 (converted from lb. to long tons).
1888-95. *Stat. Abstract 1897*, p. 199 (converted from lb. to long tons).
1896-05. *Stat. Abstract 1905*, p. 298 (converted from lb. to long tons).
COL. G, Ratio, Col. H/Col. F.
COL. H, Preferred series
1870-99. Col. F times the average of the 1900-1904 ratios in Col. G (0.9506).
1900-28. Col. A, transcribed.
1929-57. Col. B, transcribed.

MC-30, NOTES

COL. A. The figures for 1940 and 1941 include large tonnages going into government stockpiles and for 1949 through 1957 exclude deliveries to strategic stockpiles (and probably for 1942 through 1948 as well, although this is not stated). 1942-57 data are estimated.

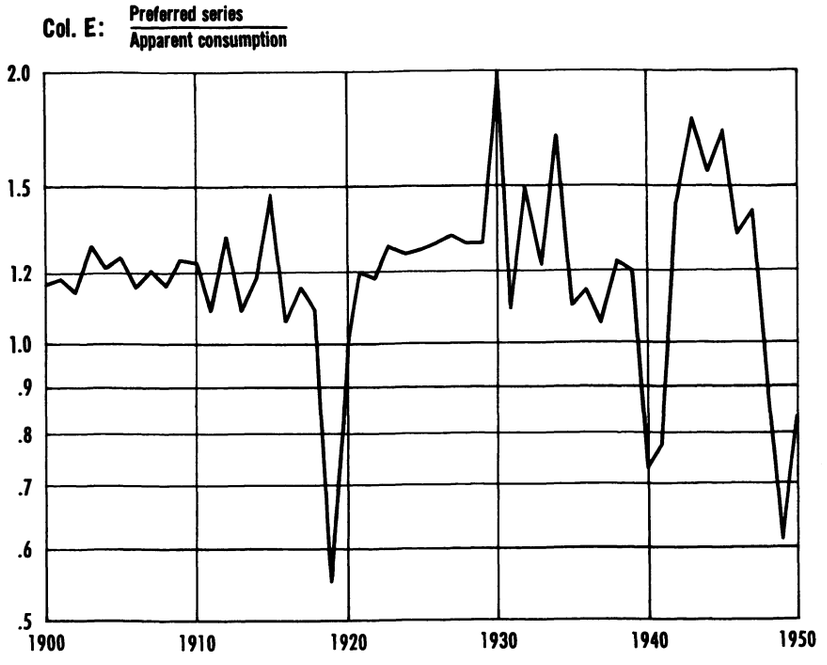
COL. B. The data are based on reports from companies estimated to account for over 90% of the consumption and stocks. This series is identical to that in *Materials Survey: Tin* (USDC, National Production Authority, June 1953), Table 13-5 (Bureau of Mines). Beginning in 1953, it includes tin in imported tin-base alloys, which in 1953-54 was about 3.6 thousand tons per year.

COL. C. The Col. C chart shows the ratio of actual consumption figures to deliveries. The differences are evidently due to the lack of adjustments for changes in consumer stocks in the deliveries series.



COL. D. Deliveries to strategic stockpiles, changes in consumers' stocks, and exports all contribute to the differences between this series and the others. The Col. E chart shows the wide fluctuations in the ratio of actual or reported consumption to "apparent consumption."

COL. H. Our preferred series is made up of imports alone, 1870-99; deliveries through 1928; and actual consumption estimates for 1929 and years following. Because of the severe fluctuations, an average of the ratios of the latter two series in their period of overlap has little meaning, though the trends and levels of the series appear to correspond. Consequently, no adjustments have been made in the level of these two series.



MC-31. NONMETALS: Net Imports

	Asbestos	Phosphate	Potash	Sulfur	Pyrites	Fluorspar	Salt	Diamonds	Total net imports ($ mil.)		
									1902 weights	1929 weights	1954 weights
	(million dollars, 1954 price weights)										
	A	B	C	D	E	F	G	H	I	J	K
1870				.7							
1871				.9							
1872				.6							
1873				1.2							
1874				1.0							
1875				1.0							
1876				1.2							
1877				1.1							
1878				1.2							
1879				1.8							
1880				2.2			2.4		(15)	(20)	(20)
1881				2.7			2.7				
1882				2.5			2.2				
1883				2.4			2.2				
1884		-.8		2.7	.1		2.3				
1885		-.7		2.5	.1		2.3				
1886		-.8		3.0	*		2.0				
1887		-1.1		2.5	.1		1.8				
1888		-1.0		2.5	n.a.		1.6				
1889		-.5		3.5	n.a.		1.3				
1890		-1.1		4.2	n.a.		1.3		(16)	(20)	(22)
1891		-1.1		3.0	.8		1.2		(13)	(16)	(19)
1892		-1.3		2.6	1.2		1.2		(12)	(18)	(18)
1893		-2.6		2.7	1.6		.9		(9)	(11)	(13)
1894		-3.0		3.2	1.3		1.1		(10)	(9)	(13)
1895	.4	-3.6		3.1	1.5		1.4		(10)	(16)	(14)
1896	.5	-2.9		3.5	1.6		1.3		(13)	(11)	(20)
1897	1.5	-3.0		3.5	2.1		1.0		(15)	(21)	(25)
1898	1.2	-2.7		3.8	2.0		.9		(17)	(28)	(25)
1899	1.3	-4.1		3.6	2.1		.9		(15)	(54)	(19)
1900	1.1	-4.1		4.3	2.6		1.0	(22.0)	(18.0)	(52.0)	(29.3)
1901	1.7	-3.0		4.5	3.2		1.0	(38.5)	(30.5)	(79.5)	(50.0)
1902	2.1	-3.6		4.4	3.5		.9	(40.5)	(30.3)	(76.1)	(52.1)
1903	2.4	-4.1		4.9	3.3		.8	(40.5)	(32.1)	(74.7)	(52.1)
1904	2.3	-4.6		3.2	3.4		.8	(39.6)	(30.0)	(60.3)	(48.7)
1905	2.9	-4.6	4.8	1.8	4.1		.6	(49.4)	(36.5)	(57.3)	(59.0)
1906	3.3	-5.8	5.8	1.5	4.8		.7	(58.3)	(42.5)	(63.9)	(68.6)
1907	3.3	-5.4	5.4	-.3	5.0		.6	(40.3)	(29.7)	(49.8)	(48.9)
1908	3.1	-7.2	5.1	-.2	5.3		.7	(17.2)	(14.5)	(29.5)	(24.0)
1909	3.1	-6.2	6.5	-.2	5.5	.3	.6	(51.5)	(37.6)	(55.4)	(61.1)
1910	3.9	-6.5	10.5	*	6.4	2.0	.4	(48.0)	(39.7)	(58.9)	(64.7)
1911	4.7	-7.6	10.2	*	8.0	1.6	.5	(52.4)	(42.5)	(64.9)	(69.8)
1912	5.9	-7.3	9.5	-.7	7.8	1.3	.4	(45.7)	(37.7)	(58.0)	(62.6)
1913	8.0	-8.3	10.2	-1.7	6.7	1.1	.4	(51.6)	(40.7)	(63.0)	(68.0)
1914	5.9	-5.8	7.7	-1.8	8.1	.5	.2	(20.9)	(20.8)	(34.8)	(35.7)
1915	7.7	-1.5	1.8	-.3	7.6	.3	.2	(28.3)	(24.2)	(36.2)	(44.1)
1916	9.5	-1.5	.3	-2.8	9.9	.6	.2	(40.7)	(30.4)	(44.6)	(56.9)
1917	10.9	-1.0	.3	-3.9	7.7	.7	-.3	(26.3)	(20.0)	(36.5)	(40.7)
1918	11.3	-.9	.3	-3.3	3.9	.6	-.5	(15.6)	(12.2)	(27.5)	(27.0)
1919	11.0	-2.3	1.5	-5.7	3.1	.3	-.3	(70.2)	(43.2)	(89.9)	(77.8)
1920	13.7	-6.6	8.4	-12.2	2.7	1.0	*	(44.4)	(24.2)	(148)	(51.4)
1921	5.9	-4.5	3.0	-7.3	1.7	.3	-.1	(25.2)	(12.3)	(32.8)	(24.2)
1922	12.3	-4.4	7.4	-12.4	2.2	1.5	-.1	(52.4)	(30.8)	(84.7)	(58.9)
1923	17.4	-5.1	7.8	-12.1	2.1	2.0	-.2	(61.7)	(39.3)	(66.5)	(73.6)
1924	15.0	-4.9	7.4	-12.3	1.9	2.4	-.3	59.7	36.8	63.2	68.9
1925	18.8	-5.3	9.6	-16.0	2.1	2.3	-.4	58.1	35.5	74.9	69.2
1926	21.2	-4.5	9.9	-14.7	2.8	3.5	-.5	(66.4)	(43.7)	(80.0)	(84.1)
1927	18.4	-5.5	9.1	-20.0	1.9	3.4	-.6	(56.8)	(31.1)	(58.1)	(63.5)
1928	18.9	-5.3	12.3	-17.3	3.7	2.3	-.5	(60.7)	(39.4)	(66.5)	(74.8)
1929	21.5	-6.8	11.8	-21.8	4.1	2.6	-.4	(63.9)	(37.8)	(66.8)	(74.9)
1930	17.1	-7.3	12.4	-15.5	2.8	3.1	-.1	(42.3)	(27.5)	(54.2)	(54.8)
1931	11.0	-5.8	7.3	-10.7	2.8	1.0	-.3	(24.5)	(14.5)	(35.7)	(29.8)
1932	7.8	-3.7	4.2	-9.2	1.9	.6	-.2	(19.0)	(9.39)	(24.3)	(20.4)
1933	9.8	-5.1	5.8	-13.4	3.0	.5	-.4	(18.1)	(7.06)	(27.4)	(18.3)
1934	9.7	-6.1	5.8	-13.0	2.8	.8	-.3	(22.4)	(9.07)	(43.3)	(22.1)
1935	13.7	-6.8	7.3	-10.5	3.2	.8	-.3	(37.5)	(22.4)	(79.8)	(44.9)
1936	19.8	-7.4	5.6	-14.4	3.4	1.2	-.1	(48.9)	(26.7)	(91.3)	(57.0)
1937	25.0	-6.4	10.8	-17.5	4.2	1.8	-.1	(58.1)	(35.8)	(145)	(75.9)
1938	14.5	-7.0	5.3	-15.0	2.7	.9	-.1	(40.0)	(18.1)	(93.2)	(41.3)
1939	19.8	-5.8	.6	-16.3	3.8	.6	-.4	(65.5)	(29.3)	(192)	(67.8)
1940	20.0	-4.6	2.1	-18.8	3.2	.2	-.6	(58.6)	(24.3)	(195)	(60.1)
1941	34.1	-6.3	-1.5	-18.7	2.9	-.2	-.6	(49.3)	(16.0)	(310)	(59.0)
1942	34.4	-3.2	-1.7	-14.3	2.4	-.3	-.6	80.6	35.2	509	97.3
1943	36.2	-1.9	-2.0	-17.0	2.0	1.7	-.7	120	57.6	578	138
1944	31.5	-1.9	-2.4	-17.2	1.4	4.1	-1.0	133	62.4	620	148
1945	30.0	-2.1	-2.3	-24.0	1.5	5.0	-1.0	142	64.7	535	149
1946	36.6	-3.5	-2.3	-31.8	1.6	1.4	-1.1	152	72.8	299	153
1947	48.8	-9.8	-1.6	-34.4	1.1	3.7	-1.0	125	56.2	257	132
1948	52.6	-6.7	-1.6	-33.0	.9	5.4	-2.0	144	64.2	533	160
1949	40.2	-7.3	-1.9	-37.3	1.0	4.6	-1.8	102	34.9	321	99.5
1950	56.3	-10.7	5.1	-37.7	1.8	7.9	-.9	135	60.1	555	157
1951	61.4	-10.1	9.2	-33.4	1.9	8.7	-2.2	136	68.2	610	172
1952	57.4	-8.1	4.9	-34.0	2.5	17.0	-1.8	142	67.5	670	180
1953	56.7	-12.3	3.2	-32.4	1.6	17.3	-.6	144	66.0	658	178
1954	55.6	-13.9	2.0	-42.7	2.4	14.1	-1.1	171	71.5	686	187
1955	60.7	-13.3	1.8	-40.8	3.0	17.5	-1.1	199	91.6	758	227
1956	56.5	-17.1	-1.7	-37.3	3.1	23.4	.2	211	95.5	816	238
1957	56.0	-18.6	-1.9	-28.0	3.0	30.4	1.3	177	86.0	646	219

MC-31, SOURCES

Calculation of Index in 1954 Prices:

COL. A, Asbestos. Table MC-34, Col. C, times $82.3/short ton (1954: value of imports divided by quantity of imports, *Min. Yearbook 1954*, Vol. I, p. 177).

COL. B., Phosphate. Table MC-35, Col. C, times $6.16/long ton (1954: value of shipments of primary products divided by quantity, *1954 Census of Mineral Industries*, p. 14H-6).

COL. C, Potash. Table MC-36, Col. C, times $37.4/short ton (1954: value at plant divided by sales, approximate equiv. K_2O, *Min. Yearbook 1954*, Vol. I, p. 933).

COL. D, Sulfur. Table MC-37, Col. C, times $25.5/long ton (1954: value of shipments of primary products divided by shipments of primary products, *1954 Census of Mineral Industries*, p. 14H-7).

COL. E, Pyrites. Table MC-37, Col. G times $17.7/long ton (1954 average value of sulfur content of output, *Min. Yearbook 1954*, Vol. I, p. 1123).

COL. F, Fluorspar. Table MC-38, Col. C, times $48.2/short ton (1954: value of output divided by quantity of output, *1954 Census of Mineral Industries*, p. 14H-5).

COL. G, Salt. Table MC-39, Col. C, times $5.11/short ton (1954: value divided by quantity, *Min. Yearbook 1954*, Vol. I, p. 965).

COL. H, Diamonds. Table MC-40, Col. I, transcribed.

COLS. I and J, All nonmetals, 1902 and 1929 prices. Calculated exactly as Col. K, except that 1902 and 1929 price weights were used. (For weights, see notes, below.)

COL. K, All nonmetals, 1954 prices. Sum of Cols. A through H, linked for missing series (1890-99 estimates for industrial diamonds used — from Table MC-40).

MC-31, NOTES

( ) Estimate.
* Less than $50 thousand.

Weighting values are generally average prices of output, derived by dividing mine values by mine output. Exceptions are asbestos and diamonds, for which imports far exceed output in quantity; here import values were used.

COLS. I and J. The price weights used in calculating these indexes are as follows:

	Commodity	*1902 price weights*	*1929 price weights*
A	Asbestos	$28.4/ton	$42.5/ton
B	Phosphate	3.18/long ton	3.41/long ton
C	Potash	31.0/ton	52.0/ton
D	Sulfur	[a]20.4/long ton	18.5/long ton
E	Pyrites (sulfur content)	8.3/long ton	10.4/long ton
F	Fluorspar	5.75/ton	18.15/ton
G	Salt (including salt in brine)	1.70/ton	3.2/ton
H	Diamonds		
	Industrial	1.0/carat	42/carat
	Gem	51/carat	67/carat

[a] 1905 data.

MC-32. NONMETALS: Consumption

(million dollars; 1954 price weights except as noted)

	Stone	Cement rock	Sand & gravel	Clays	Gypsum	Asbestos	Phosphate	Potash	Sulfur	Fluorspar	Salt	Diamonds	Nonmetals, consumption		
													1902 weights	1929 weights	1954 weights
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1870	(43)								1				(18)	(38)	(60)
1871									1						
1872									1						
1873									1						
1874									1						
1875									1						
1876									1						
1877									1						
1878									1						
1879									2						
1880	(95)	1	8		*				3		7		(41)	(71)	(133)
1881		1	8		*				3		7				
1882		1	9		*				3		7				
1883		2	10		*				4		7				
1884		2	10		*		2		4		7				
1885		2	10		*		4		4		7				
1886		2	11		*		2		4		8				
1887		3	13		*		2		4		8				
1888		3	13		*		2		4		7				
1889	267	3	13		1		3		5		7		99	171	349
1890		3	14		1		2		6		8				
1891		4	15		1		2		6		8				
1892		4	15		1		3		7		10				
1893		4	15		1		3		7		9				
1894		4	15		1		3		7		10				
1895		4	16		1	*	3		7		11				
1896		5	16		1	1	3		9		11				
1897		5	18		1	2	3		9		12				
1898		5	18		1	1	5		10		14				
1899		7	22		2	1	5		10		15				
1900		7	23		2	1	5		12		16	(22)			
1901		8	24	6	2	2	6		14		16	(38)			
1902	241	10	29	6	3	2	6		14		18	(40)	129	252	377
1903		12	32	7	4	2	6		15		14	(40)			
1904		12	32	7	4	2	7		15		17	(40)			
1905		15	39	8	4	3	7	5	19		19	(49)			
1906	255	19	49	9	6	3	7	6	21		21	(58)	173	283	458
1907	256	19	50	9	7	3	9	5	19		22	(40)	163	277	443
1908	249	19	49	7	7	3	8	5	18		21	(17)	144	251	406
1909	281	24	61	9	9	3	8	6	20	3	22	(51)	186	300	497
1910	291	28	71	10	9	4	10	10	21	5	22	(48)	201	327	529
1911	289	28	69	9	9	5	11	10	24	6	23	(52)	205	330	535
1912	291	29	70	10	10	6	11	9	26	7	24	(46)	205	334	539
1913	298	33	82	11	10	8	11	10	23	7	25	(52)	218	353	570
1914	279	32	82	10	10	6	11	8	27	5	25	(21)	190	313	516
1915	264	31	79	10	9	8	10	2	28	7	28	(28)	189	306	504
1916	291	33	92	13	11	10	11	1	43	8	33	(41)	225	352	587
1917	238	33	79	14	10	11	15	2	50	11	35	(26)	205	325	524
1918	178	25	64	13	8	11	14	2	46	13	36	(16)	170	268	426
1919	195	29	73	11	9	11	12	3	25	7	35	(20)	192	316	480
1920	219	36	85	15	12	14	19	10	41	10	35	(44)	215	435	544
1921	194	36	82	10	11	6	8	3	25	2	25	(25)	163	266	427
1922	239	42	98	14	15	12	11	8	31	8	35	(52)	220	378	565
1923	298	51	142	18	18	17	13	9	39	8	36	(62)	280	435	711
1924	302	55	158	19	19	15	13	8	37	8	34	(60)	286	444	728
1925	331	61	170	21	22	19	16	11	42	8	37	(58)	312	496	796
1926	333	62	180	22	22	21	15	11	50	8	37	(66)	332	516	827
1927	357	65	195	23	21	19	14	10	44	9	38	(57)	334	520	852
1928	349	66	206	24	20	19	16	15	50	9	41	(61)	352	540	876
1929	366	64	212	26	19	22	16	14	56	9	43	(64)	369	562	911
1930	321	59	182	25	13	17	17	15	49	7	41	(42)	317	494	788
1931	236	46	133	19	10	11	10	10	37	5	37	(24)	230	367	578
1932	170	28	88	14	5	8	7	6	27	3	33	(19)	163	258	408
1933	151	23	68	16	5	10	10	11	39	4	38	(18)	167	264	393
1934	177	28	78	17	6	10	11	10	40	5	39	(22)	187	309	443
1935	167	28	87	21	7	14	12	16	44	7	40	(37)	209	361	480
1936	253	42	124	25	10	21	13	15	50	9	45	(49)	277	467	656
1937	257	43	129	28	12	26	18	21	62	9	47	(58)	306	544	710
1938	241	39	109	20	10	15	16	18	40	6	41	(40)	249	444	595
1939	290	46	122	26	12	21	17	14	57	9	47	(65)	303	606	726
1940	288	48	135	29	14	22	20	17	63	11	52	(59)	318	640	758
1941	330	60	187	41	18	36	23	18	77	15	64	(49)	380	863	918
1942	326	67	240	40	18	36	25	24	81	17	69	81	434	1107	1024
1943	279	49	181	41	15	37	30	25	84	19	77	120	417	1106	957
1944	254	32	156	40	15	32	31	28	92	20	79	133	409	1120	912
1945	256	36	157	41	15	31	34	30	91	17	78	142	421	1040	928
1946	306	59	198	51	22	38	39	32	90	15	76	152	485	888	1078
1947	350	67	219	56	24	51	46	38	108	18	81	125	527	935	1183
1948	383	74	241	63	28	56	47	41	113	20	82	144	567	1264	1292
1949	377	76	238	56	26	44	48	40	105	17	78	102	527	1040	1207
1950	426	84	266	67	32	60	52	53	129	21	84	135	621	1368	1409
1951	471	90	295	76	33	66	58	62	123	24	101	136	671	1501	1535
1952	487	91	311	75	32	62	62	65	124	25	98	142	689	1587	1574
1953	502	97	318	75	32	61	65	68	130	28	106	144	711	1611	1626
1954	525	99	409	72	35	60	66	74	126	23	104	171	776	1718	1764
1955	595	109	433	86	41	64	68	77	144	28	115	199	859	1888	1959
1956	625	115	484	92	40	60	70	77	147	30	124	211	911	2014	2075
1957	687	108	480	86	35	60	71	78	143	31	123	177	909	1868	2079

MC-32, SOURCES

Calculation of Index in 1954 Prices:

COL. A, Stone. Table MO-21, Col. K, transcribed.

COL. B, Cement rock. Table MC-33, Col. E, times .25 times $1.46/ton (see Table MO-20, Col. B source note).

COL. C, Sand and gravel. Table MO-26 (1880-1908, Col. B; 1909-57, Col. C) (taking consumption equal to output) times $1.03/ton (1954: value of output divided by quantity of output, *1954 Census of Mineral Industries,* p. 14E-4).

COL. D, Clays. Table MO-27, Col. J, transcribed.

COL. E, Gypsum. Table MO-28, Col. A, times $3.86/ton (1954 price, from Table MP-36).

COL. F, Asbestos. Table MC-34, Col. E, times $82.3/ton (cf. Table MC-31).

COL. G, Phosphate. Table MC-35, Col. E, times $6.16/long ton (cf. Table MC-31).

COL. H, Potash. Table MC-36, Col. D, times $37.4/ton (cf. Table MC-31).

COL. I, Sulfur. Table MC-37, Col. I, times $25.5/long ton (cf. Table MC-31).

COL. J, Fluorspar. Table MC-38, Col. E, times $48.2/ton (cf. Table MC-31).

COL. K, Salt. Table MC-39, Col. D, times $5.11/ton (cf. Table MC-31).

COL. L, Diamonds. Table MC-40, Col. I, transcribed.

COLS. M and N, Consumption indicators, 1902 and 1929 price weights. Computed exactly as Col. O, except that 1902 and 1929 price weights were used in the computation. (For weights, see notes, below.)

COL. O, Consumption indicator, 1954 price weights. Sum of Cols. A through L, linked to adjust for missing data in earlier years.

MC-32, NOTES

( ) Estimate.
* Less than $500,000.

We used the *Census of Mineral Industries* aggregate values of output as weights for sand and gravel, and stone, in which foreign trade is very small; average unit value of the Census for fluorspar and sulfur, where foreign trade is important, and Census output figures would not be a fair representation of total U.S. consumption value. We used *Min. Yearbook 1954* average values for phosphate and potash, because the Census did not give P_2O_5 and K_2O contents; for asbestos, because Census did not give imports, and we felt output would not be representative; for salt, because Census covers rock salt only.

COLS. M and N. The prices used in the computation of the 1902- and 1929-weighted indexes are as follows (sources for most of these are the same as for Table MO-20, nonmetals output):

Commodity	*1902 price weights*	*1929 price weights*
A Stone	(see Notes for Table MO-21)	
B Cement rock	$.289/ton	$.538/ton
C Sand and gravel	.48/ton	.63/ton
D Clays	(see Notes for Table MO-27)	
E Gypsum	1.41/ton	2.15/ton
F Asbestos	28.4/ton	42.5/ton
G Phosphate	3.18/long ton	3.41/long ton
H Potash	31.0/ton	52.0/ton
I Sulfur	[a]20.4/long ton	18.5/long ton
J Fluorspar	5.75/ton	18.15/ton
K Salt	1.70/ton	3.2/ton
L Diamonds		
Industrial	1.0/carat	42/carat
Gem	51/carat	67/carat

[a] 1905 data.

MC-33. CEMENT: Net Imports and Consumption

(million barrels)

	Output	Imports	Exports	Net imports	Apparent consumption
	A	B	C	D	E
1878		.1			
1879		.1			
1880	2.1	.2			2.3
1881	2.5	.2			2.7
1882	3.2	.4			3.6
1883	4.3	.5			4.7
1884	4.1	.6			4.7
1885	4.2	.6			4.8
1886	4.3	.9			5.3
1887	6.9	1.5			8.5
1888	6.5	1.8			8.3
1889	6.8	1.8			8.6
1890	7.4	2.0			9.4
1891	7.9	3.0			10.9
1892	8.8	2.5			11.2
1893	8.0	2.7			10.7
1894	8.4	2.7			11.0
1895	8.7	3.0			11.8
1896	9.5	3.0			12.5
1897	11.0	2.1			13.1
1898	12.3	1.2			13.4
1899	15.8	2.1			18.0
1900	17.2	2.4	.1	2.3	19.5
1901	20.1	.9	.4	.6	20.6
1902	25.7	2.0	.3	1.6	27.4
1903	29.9	2.3	.3	2.0	31.9
1904	31.7	1.0	.8	.2	31.9
1905	40.1	.9	.9	*	40.1
1906	51.0	2.3	.6	1.7	52.7
1907	52.2	2.0	.9	1.1	53.4
1908	52.9	.8	.8	*	52.9
1909	66.7	.4	1.1	-.6	66.1
1910	77.8	.3	2.5	-2.2	75.6
1911	79.5	.2	3.2	-3.0	76.5
1912	83.3	.1	4.3	-4.2	79.2
1913	92.9	.1	3.0	-2.9	90.1
1914	89.0	.1	2.1	-2.0	87.0
1915	87	*	3	-3	84
1916	92	*	3	-3	90
1917	93	*	3	-3	91
1918	72	*	2	-2	69
1919	81	*	2	-2	79
1920	101	1	3	-2	98
1921	99	*	1	-1	98
1922	116	*	1	-1	115
1923	139	2	1	1	139
1924	151	2	1	1	152
1925	163	4	1	3	166
1926	167	3	1	2	169
1927	175	3	1	1	177
1928	179	2	1	1	180
1929	173	2	1	1	174
1930	163	1	1	*	163
1931	127	*	*	*	127
1932	77	*	*	*	77
1933	64	*	1	*	64
1934	78	*	1	*	78
1935	78	1	*	*	78
1936	114	2	*	1	116
1937	118	2	*	1	119
1938	107	2	1	1	108
1939	125	2	1	1	125
1940	133	1	2	-1	132
1941	167	*	3	-3	164
1942	185	*	1	-1	184
1943	135	*	2	-2	133
1944	92	*	4	-4	88
1945	104	*	6	-6	98
1946	167	*	5	-5	161
1947	189	*	7	-7	183
1948	209	*	6	-6	203
1949	213	*	5	-4	208
1950	230	1	2	-1	229
1951	249	1	3	-2	247
1952	253	*	3	-3	250
1953	268	*	2	-2	265
1954	272	*	2	-1	271
1955	294	5	2	3	298
1956	313	4	2	2	316
1957	294	4	1	3	297

MC-33, SOURCES

Col. A, Output of portland, natural, and puzzolan cement. Table MO-24, Col. C, transcribed.

Col. B, Imports

1878-1912. *Min. Resources 1914*, Part II, p. 253.
1913-19. *Min. Resources 1919*, Part II, p. 403.
1920-29. *Min. Resources 1929*, Part II, p. 416.
1930-31. Statistical appendix to *Min. Yearbook 1932-33*, p. 496.
1932-34. *Min. Yearbook 1937*, p. 1159.
1935-37. *Min. Yearbook 1940, Review of 1939*, p. 1154.
1938-42. *Min. Yearbook 1943*, p. 1274.
1943-47. *Min. Yearbook 1947*, p. 227.
1948-52. *Min. Yearbook 1952*. Vol. I, p. 273.
1953-57. *Min. Yearbook 1957*, Vol. I, p. 332.

Col. C, Exports

1900-12. *Min. Resources 1914*, Part II, p. 251.
1913-19. *Min. Resources 1919*, Part II, p. 403.
1920-29. *Min. Resources 1929*, Part II, p. 418.
1930-31. Statistical appendix to *Min. Yearbook 1932-33*, p. 496.
1932-34. *Min. Yearbook 1937*, p. 1161.
1935-38. *Min. Yearbook 1940, Review of 1939*, p. 1155.
1939-42. *Min. Yearbook 1943*, p. 1274.
1943-47. *Min. Yearbook 1947*, p. 228.
1948-52. *Min. Yearbook 1952*, Vol. I, p. 274.
1953-57. *Min. Yearbook 1957*, Vol. I, p. 333.

Col. D, Net imports. Col. B minus Col. C.

Col. E, Apparent consumption. Col. A plus Col. C.

MC-33, NOTES

* Less than 500,000 barrels (for 1915-19, less than 50,000 barrels).

MC-34. ASBESTOS: Imports and Consumption

(thousand short tons)

	Imports	Exports	Net imports (Col. A minus Col. B)	Output	Apparent consumption (Col. C plus Col. D)
	A	B	C	D	E
1890				.1	
1891				.1	
1892				.1	
1893				.1	
1894				.3	
1895	5		5	.8	6
1896	6		6	.5	7
1897	18		18	.6	19
1898	14		14	.6	15
1899	16		16	.7	17
1900	13		13	1.1	14
1901	21		21	.7	22
1902	26		26	1.0	27
1903	29		29	.9	30
1904	28		28	1.5	29
1905	35		35	3.1	38
1906	40		40	1.7	42
1907	40		40	.7	41
1908	38		38	.9	39
1909	38		38	3.1	41
1910	47.5		47.5	3.7	51
1911	57.1		57.1	7.6	65
1912	71.5		71.5	4.4	76
1913	97.1		97.1	1.1	98
1914	71.9		71.9	1.2	73
1915	93.6		93.6	1.6	95
1916	116		116	1.5	117
1917	134	.7	133	2.0	135
1918	138	.7	137	1.0	138
1919	135	1.1	134	1.2	135
1920	168	.6	167	1.6	169
1921	72.5	.5	72.0	.8	73
1922	149	.4	149	.1	149
1923	212	.7	211	.2	212
1924	183	1.3	182	.3	182
1925	230	1.1	229	1.3	231
1926	258	1.1	257	1.4	258
1927	224	.3	224	3.0	226
1928	231	.8	230	2.2	232
1929	262	.7	261	3.2	265
1930	209	.8	208	4.2	212
1931	136	1.7	134	3.2	138
1932	96.8	1.7	95.1	3.6	99
1933	119	1.4	118	5.0	123
1934	120	1.7	118	6.5	124
1935	167	.8	166	8.9	175
1936	244	3.7	240	11.1	251
1937	307	3.0	304	12.1	316
1938	179	2.8	176	10.4	187
1939	243	2.5	241	15.5	256
1940	247	4.5	243	20.1	262
1941	419	4.8	414	24.4	439
1942	419	.8	418	15.5	434
1943	440	.4	440	6.0	446
1944	383	.5	383	6.7	389
1945	374	8.6	365	12.2	378
1946	456	11.0	445	14.4	459
1947	595	2.0	593	25.1	617
1948	648	9.2	639	37.2	678
1949	509	20.0	489	42.9	535
1950	705	20.9	684	41.4	727
1951	762	16.5	746	51.7	797
1952	709	10.7	698	53.9	753
1953	692	3.1	689	58.0	744
1954	678	1.9	676	45.8	724
1955	740	2.8	737	44.6	782
1956	690	2.9	687	41.3	728
1957	683	2.9	680	43.7	723

MC-34, SOURCES

COL. A, Imports

1895-1909. "Value of imports—unmanufactured," from *Min. Resources 1908*, Part II, p. 699, and *Min. Resources 1912*, Part II, p. 987; divided by average value of Canadian output of "Asbestos" plus "Asbestic," in *Min. Resources 1912*, Part II, p. 995.

1910-11. Imports in years ending June 30: *Min. Resources 1911*, Part II, p. 999.

1912. *Min. Resources 1912*, Part II, p. 987 (calendar year).

1913-14. *Min. Resources 1914*, Part II, p. 95.

1915-16. *Min. Resources 1916*, Part II, p. 23.

1917-26. *Min. Resources 1926*, Part II, p. 199.

1927-31. *Min. Resources 1931*, Part II, p. 209.

1932. *Min. Yearbook 1932-33*, p. 747.

1933. *Min. Yearbook 1934*, p. 1009.

1934-35. *Min. Yearbook 1935*, p. 1119.

1936-39. *Min. Yearbook 1940*, p. 1369.

1940. *Min. Yearbook 1943*, p. 1479.

1941-45. *Min. Yearbook 1945*, p. 1463.

1946-49. *Min. Yearbook 1950*, p. 139.

1950-54. *Min. Yearbook 1954*, Vol. I, p. 177.

1955-57. *Min. Yearbook 1958*, Vol. I, p. 185.

COL. B, Exports. Same sources as Col. A, except:

1948-50. *Min. Yearbook 1952*, p. 166.

COL. C, Net imports. Col. A minus Col. B.

COL. D. Output. Source pages close to those in COL. A, except:

1890-1909. *Min. Resources 1909*, Part II, p. 723.

1910-14. *Min. Resources 1914*, Part II, p. 93.

COL. E, Apparent consumption

1895-1922. Col. C plus Col. D.

1923-32. *Min. Yearbook 1932-33*, p. 746.

1933-34. *Min. Yearbook 1937*, p. 1364.

1935-39. *Min. Yearbook 1940*, p. 1364.

1940-44. *Min. Yearbook 1945*, p. 1459.

1945-49. *Min. Yearbook 1950*, p. 139.

1950-54. *Min. Yearbook 1954*, Vol. I, p. 177.

1955-57. *Min. Yearbook 1958*, Vol. I, p. 185.

MC-34, NOTES

COL. A. The estimating method for 1895-1909 produces figures exceeding the figures on quantities of imports by less than 5% in 1910 and 1911, but falls short by amounts ranging from 17% to 25% for 1912-14. The estimates hold some assurance from the fact that the United States imported the bulk of the Canadian output; but they run considerable chance of error because of the wide variation in prices among the different qualities. In 1908, for example, they ran from $.74 to $300.59 per ton (*Min. Resources 1909*, Part II, p. 724). This wide range is of course a challenge to the meaning of the quantitative reports themselves.

MC-35. PHOSPHATE ROCK: Net Imports and Consumption

	Imports	Exports	Net imports	Production	Apparent consumption
	(thousand long tons)			(mil. long tons)	
	A	B	C	D	E
1880				.211	
1881				.267	
1882				.332	
1883				.378	
1884	21.9	[a]161	-131	.432	.30
1885	24.1	[a]137	-106	.673	.57
1886	37.1	[a]173	-127	.431	.30
1887	26.6	[a]221	-183	.481	.30
1888	28.9	[a]194	-155	.452	.30
1889	34.6	[a]130	-89	.546	.46
1890	30.2	[a]228	-186	.510	.32
1891	34.2	[a]232	-186	.588	.40
1892	25.5	[a]251	-213	.682	.47
1893	20.0	[a]460	-417	.941	.52
1894	23.9	[a]543	-492	.997	.50
1895	21.6	[a]639	-585	1.04	.45
1896	18.9	[a]514	-469	.931	.46
1897	9.9	[a]530	-494	1.04	.55
1898	9.8	[a]474	-440	1.31	.87
1899	115	781	-666	1.52	.85
1900	110	776	-666	1.49	.82
1901	142	625	-483	1.48	1.00
1902	161	748	-587	1.49	.90
1903	153	818	-665	1.58	.91
1904	110	849	-739	1.87	1.13
1905	129	880	-751	1.95	1.20
1906	20.0	964	-944	2.08	1.14
1907	24.4	901	-877	2.26	1.38
1908	14.3	1188	-1174	2.39	1.22
1909	12.9	1021	-1008	2.34	1.33
1910	21.7	1083	-1061	2.66	1.60
1911	16.2	1247	-1231	3.05	1.82
1912	28.9	1207	-1178	2.97	1.79
1913	20.1	1367	-1347	3.11	1.76
1914	15.1	964	-949	2.73	1.78
1915	5.4	253	-248	1.84	1.59
1916	4.6	244	-239	1.98	1.74
1917	.1	166	-166	2.58	2.41
1918	n.a.	143	-143	2.49	2.35
1919	0.1	379	-379	2.27	1.89
1920	.2	1070	-1070	4.10	3.03
1921	3.5	733	-729	2.06	1.33
1922	5.9	719	-713	2.42	1.71
1923	6.7	828	-821	3.01	2.19
1924	16.1	819	-803	2.87	2.07
1925	2.7	870	-867	3.48	2.61
1926	17.4	749	-732	3.21	2.48
1927	28.2	918	-890	3.17	2.28
1928	45.8	899	-853	3.50	2.65
1929	44.9	1143	-1098	3.76	2.66
1930	32.7	1226	-1193	3.93	2.74
1931	13.5	951	-937	2.54	1.60
1932	13.0	613	-600	1.71	1.11
1933	7.7	829	-821	2.49	1.67
1934	3.7	993	-989	2.84	1.85
1935	3.6	1104	-1100	3.04	1.94
1936	3.1	1209	-1206	3.35	2.14
1937	13.4	1053	-1040	3.96	2.92
1938	7.0	1141	-1134	3.74	2.61
1939	3.5	949	-945	3.76	2.81
1940	3.0	751	-748	4.00	3.25
1941	4.3	1020	-1016	4.69	3.67
1942	3.8	529	-525	4.64	4.11
1943	46.5	358	-311	5.13	4.82
1944	123	439	-316	5.38	5.06
1945	142	491	-349	5.81	5.46
1946	59.7	633	-573	6.86	6.29
1947	43.5	1643	-1599	9.03	7.43
1948	48.1	1141	-1093	8.67	7.58
1949	64.9	1258	-1193	8.99	7.80
1950	87.2	1832	-1745	10.25	8.50
1951	93.4	1727	-1634	11.10	9.47
1952	110	1426	-1316	11.32	10.00
1953	101	2101	-2000	12.52	10.52
1954	122	2385	-2263	13.04	10.78
1955	117	2268	-2151	13.19	11.04
1956	110	2880	-2770	14.11	11.34
1957	110	3126	-3016	14.60	11.58

MC-35, SOURCES

Col. A, Imports

1884-87. *Stat. Abstract 1887*, p. 84 (data for fiscal years ending June 30).
1888-95. *Stat. Abstract 1897*, p. 182 (data for fiscal years ending June 30).
1896-1904. *Stat. Abstract 1905*, p. 282 (data for fiscal years ending June 30).
1905-07. *Stat. Abstract 1911*, p. 430 (data for fiscal years ending June 30).
1908-12. *Min Resources 1912*, Part II, p. 858.
1913-17. *Min. Resources 1917*, Part II, p. 13.
1919-22. *Min. Resources 1923*, Part II, p. 244.
1923-26. *Min. Resources 1926*, Part II, p. 277.
1927-29. *Min. Resources 1929*, Part II, p. 352.
1930-32. *Min. Yearbook 1932-33*, statistical appendix, p. 27.
1933-34. *Min. Yearbook 1937*, p. 1323.
1935-39. *Min. Yearbook 1940, Review of 1939*, p. 1311.
1940-42. *Min. Yearbook 1943*, p. 1426.
1943-47. *Min. Yearbook 1947*, p. 989.
1948. *Min. Yearbook 1948*, p. 1037.
1949-50. *Min. Yearbook 1950*, p. 1017.
1951-52. *Min. Yearbook 1952*, Vol. I, p. 800.
1953. *Min. Yearbook 1954*, Vol. I, p. 904.
1954-55. *Min. Yearbook 1955*, Vol. I, p. 883.
1956-57. *Min. Yearbook 1957*, Vol. I, p. 921.

Col. B, Exports

1884-87. *Stat. Abstract 1887*, p. 103 (data for fiscal years ending June 30).
1888-95. *Stat. Abstract 1897*, p. 156 (fiscal years).
1896-1904. *Stat. Abstract 1905*, p. 310 (fiscal years).
1905-07. *Stat. Abstract 1911*, p. 459 (fiscal years).
1908-56. *Hist. Stat. 1960*, series M-194.
1957. *Min. Yearbook 1957*, Vol. I, p. 922.

Col. C, Net imports. Col. A minus Col. B.

Col. D, Production. Table MO-29, Col. C, transcribed.

Col. E, Apparent consumption. Col. C plus Col. D.

MC-35, NOTES

[a] Includes all fertilizer. In 1899-1911, when phosphates and "other" were reported separately, phosphates were 95% to 98% of the total, with the lowest percent being that for 1899.

These data are deficient in that they report gross tonnage of phosphatic rocks rather than phosphorus or phosphorus pentoxide (P_2O_5) content.

The data refer only to trade in phosphate rock; there were important net exports of superphosphates and other fertilizer materials, especially in the later years. Net exports of superphosphates, probably equivalent to a somewhat lesser weight in phosphate rock, were as follows (in 1,000 long tons):

1909	n.a.	1947	227	1953	245
1917	4	1948	380	1954	387
1919	87	1949	315	1955	371
1929	85	1950	238	1956	493
1939	78	1951	264	1957	560
1946	239	1952	251		

There is also trade in various fertilizers which contain phosphates, as well as bone ashes containing phosphates.

Col. C. In extrapolating the series for 1898-1884, we have assumed phosphate rock exports to be 95% of all fertilizer exports (see note a, above).

MC-36. POTASH: Net Imports and Consumption

(thousand tons, K_2O equivalent)

	Imports	Exports	Preferred series, net imports	Preferred series, apparent consumption
	A	B	C	D
1905	129		129	129
1906	156		156	156
1907	144		144	144
1908	136		136	136
1909	173		173	173
1910	280		280	280
1911	274		274	274
1912	254		254	254
1913	272		272	272
1914	207		207	207
1915	49		49	50
1916	8		8	18
1917	8		8	41
1918	8		8	47
1919	40		40	86
1920	225		224	265
1921	79		79	83
1922	201	3	198	209
1923	210	2	208	229
1924	200	1	199	222
1925	258	1	257	282
1926	266	1	265	291
1927	244	1	243	274
1928	330	2	329	390
1929	325	10	315	382
1930	342	11	331	390
1931	215	16	196	262
1932	114	1	112	168
1933	172	13	155	293
1934	172	15	154	275
1935	242	47	196	420
1936	212	59	151	396
1937	351	60	288	556
1938	194	49	142	468
1939	100	84	16	387
1940	119	63	56	449
1941	16	57	-41	491
1942	4	49	-45	636
1943	17	70	-53	678
1944	5	69	-64	754
1945	6	68	-62	809
1946	4	66	-62	867
1947	26	68	-42	1011
1948	27	70	-43	1100
1949	19	70	-51	1070
1950	201	65	136	1412
1951	314	69	245	1653
1952	188	56	132	1731
1953	134	49	85	1816
1954	119	66	53	1971
1955	178	130	48	2054
1956	181	226	-45	2058
1957	182	224	-52	2085

MC-36, SOURCES

COL. A, Imports

1905-49. *Hist. Stat. 1960,* series M-192, "Potash: imports."

1950-57. *Minerals Yearbooks,* potash chapters, table on salient statistics of the potash industry, "Imports of potash materials, approx. equivalent K_2O."

COL. B, Exports

1922-38. *Mineral Resources* and *Minerals Yearbooks,* potash chapters, exports of fertilizers and sales containing potash, times percentage of K_2O equivalent in sales of domestic producers.

1939-57. *Minerals Yearbooks,* potash chapters, "Exports of potash materials, approx. equivalent K_2O."

COL. C, Preferred series, net imports. Col. A minus Col. B.

COL. D, Preferred series, consumption.

1905-22. Col. A minus Col. B plus production (Table MO-30).

1923-57. *Mineral Resources and Minerals Yearbooks,* various years, text or tables, "Apparent consumption . . . approximate equivalent K_2O."

MC-37. SULFUR: Net Imports and Consumption

(thousand long tons)

	Sulfur imports	Sulfur exports	Net imports of sulfur	Sulfur shipments	Preferred series, apparent consumption of native sulfur	Pyrites output, sulfur content	Pyrites imports, sulfur content	Byproduct sulfur	Preferred series, apparent consumption, all sulfur
	A	B	C	D	E	F	G	H	I
1870	28		28		28				(30)
1871	36		36		36				(40)
1872	25		25		25				(30)
1873	46		46		46				(50)
1874	41		41		41				(50)
1875	40		40		40				(50)
1876	47		47		47				(50)
1877	44		44		44				(50)
1878	48		48		48				(60)
1879	71		71		71				(80)
1880	88		88	1	89	.9		10	(110)
1881	105		105	1	106	4.5		10	(130)
1882	98		98	1	99	5.4		10	(130)
1883	95		95	1	96	11		20	(140)
1884	105		105	*	105	16	8	20	150
1885	97		97	1	98	22	3	20	140
1886	118		118	2	120	25	1	20	170
1887	97		97	3	100	23	8	20	150
1888	98		98	0	98	24	n.a.	30	150
1889	136		136	*	136	42	n.a.	30	210
1890	163		163	0	163	45	n.a.	30	240
1891	117		117	1	118	48	45	40	250
1892	101		101	2	103	50	69	40	260
1893	106		106	1	107	34	88	40	270
1894	125		125	*	125	48	75	40	290
1895	122		122	2	124	45	86	40	290
1896	139		139	5	144	52	90	50	340
1897	137		137	2	139	64	117	50	370
1898	151		151	1	152	87	114	60	410
1899	140		140	4	144	79	121	60	400
1900	167		167	3	170	92	145	70	480
1901	175		175	7	182	106	182	70	540
1902	171		171	7	178	90	198	80	550
1903	191		191	7	198	102	189	80	570
1904	130	3	127	85	212	93	190	90	580
1905	84	12	72	220	292	114	230	100	740
1906	74	14	60	295	355	117	270	100	840
1907	23	36	-13	272	259	111	280	100	750
1908	21	28	-7	206	199	100	300	100	700
1909	31	37	-6	258	252	111	310	120	790
1910	31	31	*	251	251	109	360	120	840
1911	29	28	1	254	253	140	450	100	940
1912	30	58	-28	305	277	160	440	140	1020
1913	23	89	-66	319	253	150	380	140	920
1914	26	98	-72	342	270	150	460	170	1050
1915	25	37	-12	294	282	180	430	200	1090
1916	21	129	-108	767	659	200	560	260	1680
1917	1	153	-152	1120	968	220	435	330	1950
1918	*	131	-131	1267	1136	210	220	255	1820
1919	*	225	-225	678	453	170	175	180	980
1920	*	477	-477	1518	1041	120	150	280	1590
1921	*	286	-286	954	668	70	98	140	980
1922	*	486	-486	1344	858	80	125	160	1220
1923	*	473	-473	1619	1146	80	120	180	1530
1924	1	482	-481	1537	1056	70	110	200	1440
1925	*	629	-629	1858	1226	80	120	230	1660
1926	*	577	-577	2073	1490	70	160	240	1960
1927	3	789	-786	2072	1272	120	110	240	1740
1928	5	685	-680	2083	1383	113	210	270	1980
1929	1	855	-854	2437	1566	121	230	290	2210
1930	*	609	-609		1381	124	160	272	1940
1931	0	420	-420		957	121	160	198	1440
1932	0	360	-360		749	66	110	138	1060
1933	5	531	-526		1111	108	170	142	1530
1934	6	517	-511		1102	168	160	132	1560
1935	2	413	-411		1223	203	180	139	1740
1936	1	567	-566		1403	217	190	167	1980
1937	1	689	-688		1778	232	235	191	2440
1938	3	592	-589		1040	219	150	160	1570
1939	14	653	-639		1595	220	215	194	2220
1940	28	766	-738		1820	262	180	211	2470
1941	29	761	-732		2344	270	165	234	3010
1942	26	586	-560		2472	307	135	242	3160
1943	17	682	-665		2528	337	115	302	3280
1944	*	675	-675		2905	333	80	304	3620
1945	*	943	-943		2907	296	85	290	3580
1946	*	1246	-1246		2848	337	88	262	3530
1947	*	1350	-1350		3490	392	61	276	4220
1948	*	1296	-1296		3720	388	52	257	4420
1949	*	1461	-1461		3410	378	58	262	4110
1950	*	1479	-1479		4158	393	100	400	5050
1951	2	1312	-1310		3786	433	106	485	4810
1952	5	1338	-1333		3728	418	142	572	4860
1953	1	1271	-1270		3932	380	91	675	5080
1954	1	1675	-1674		3700	405	134	691	4930
1955	35	1636	-1601		4246	410	171	818	5640
1956	212	1675	-1463		4268	432	175	902	5780
1957	496	1593	-1097		3997	436	169	990	5590

MC-37, SOURCES

COL. A, Sulfur imports

1870-97. *Min. Resources 1897,* Part II, p. 562, imports for consumption, crude and refined (1870-87 data are for fiscal years ending June 30).

1898-1900. *Hist. Stat. 1960,* series M-186, "Crude imports."

1901-14. *Mineral Resources,* various volumes, "Imports, crude and refined."

1915-30. *Min. Resources 1931,* Part II, p. 136.

1931-57. *Minerals Yearbooks,* various years, sulfur chapter.

COL. B, Sulfur exports

1904-29. *Hist. Stat. 1960,* series M-187, "Crude exports."

1930-57. *Minerals Yearbooks* of various years, "Exports, crude and refined."

COL. C, Sulfur net imports. Col. A minus Col. B.

COL. D, Sulfur shipments (or output)

1880-1906. Output: *Hist. Stat. 1960,* series M-185, "Production from Frasch Process" (presumably other processes before 1904).

1907-29. *Min. Resources 1926,* Part II, p. 296, and *1929,* Part II, p. 176, sulphur produced and shipped in the United States: shipped.

COL. E, Preferred series, apparent consumption of native sulfur.

1870-1924. Col. C plus Col. D.

1925-57. *Mineral Resources* and *Minerals Yearbooks,* various volumes, "Apparent Consumption of Sulfur."

COL. F, Pyrites output, sulfur content. Table MO-31, Col. D, transcribed.

COL. G, Pyrites imports, sulfur content.

1884-1945. *Hist. Stat. 1960,* series M-189, "Pyrites imports," times .45 to reduce to sulfur content.

1946-57. *Minerals Yearbooks,* various volumes, sulfur chapters, table on apparent consumption of sulfur in all forms: pyrites, imports, crude sulfur or sulfur content.

COL. H

1880-1910. Sulfur in sulfuric acid produced from copper and zinc smelter gases. Estimated as 13.4% of copper output (Table MO-13) plus 20.2% of zinc output (Table MO-15), which gives results close to the reported output of 1911-20 (see *Min. Resources 1913,* Part II, p. 47, etc.).

1911-57. Byproduct sulfur recovery. Table MO-31, Col. B, transcribed.

COL. I, Preferred series, apparent consumption of sulfur, in all forms. Sum of Cols. E through H.

MC-37, NOTES

( ) Rough estimate.

* Less than 500 long tons.

Col. D. We have used a series for "shipments" rather than the output series of Table MO-31, because stockpiling by producers is quite significant in this industry.

Col. G. The 45% factor applied to gross pyrites imports is in accord with numerous assumptions and reports of *Mineral Resources* of the times; it also is in close accord with the actual content series which began in 1946.

Col. I. Pyrites exports were generally negligible and have been neglected here. Byproduct sulfur output has been extrapolated for years before 1911 by the output of copper and zinc, principal sources of byproduct sulfuric acid. Cf. *Min. Resources 1931,* Part II, p. 136.

MC-38. FLUORSPAR: Net Imports and Consumption

(thousand short tons)

	Imports	Exports	Net imports (Col. A minus Col. B)	Production	Apparent consumption
	A	B	C	D	E
1909	7.0		7.0	50.7	[a]58
1910	42.5		42.5		112
1911	32.8		32.8		120
1912	26.2		26.2		143
1913	22.7		22.7		138
1914	10.2		10.2		105
1915	7.2		7.2		144
1916	12.3		12.3		168
1917	13.6		13.6		233
1918	12.6		12.6		276
1919	6.9		6.9		145
1920	24.6	[b]2.8	21.8		209
1921	6.2		6.2		41
1922	33.1	[b]2.3	30.8		172
1923	42.2	[b]1.1	41.1	121	[a]162
1924	51.0	[b] .6	50.4	125	[a]175
1925	48.7	[b]1.1	47.6	114	[a]166
1926	75.7	[b]2.1	73.6		174
1927	71.5	[b] .4	71.1		176
1928	47.2	[b] .4	46.8		196
1929	54.3	[b] .5	53.8		196
1930	64.9	[b] .3	64.6		138
1931	20.7	[b] .3	20.4		94
1932	13.2	[b] .02	13.2		56
1933	10.4	[b] .1	10.3		85
1934	16.7	[b] .5	16.2		111
1935	16.3	[b] .3	16.0		137
1936	25.5	.2	25.3		182
1937	37.0	.5	36.5		194
1938	19.6	.8	18.8		115
1939	16.3	3.0	13.3		177
1940	11.9	8.5	3.4		218
1941	7.5	12.2	-4.7		304
1942	2.2	9.0	-6.8		361
1943	43.8	9.1	34.7		389
1944	87.2	2.0	85.2		410
1945	105.0	1.4	103.6		356
1946	29.9	1.7	28.2		303
1947	78.7	1.2	77.5		376
1948	111.6	.7	110.9		406
1949	95.6	.8	94.8		345
1950	164.6	.7	163.9		426
1951	181.3	1.2	180.1		497
1952	352.5	.7	351.8		522
1953	359.6	.8	358.9		587
1954	293.3	.6	292.7		480
1955	363.4	.9	362.5		570
1956	485.6	.2	485.4		621
1957	631.4	.8	630.6		645

MC-38, SOURCES

Col. A, Imports. *Minerals Yearbooks*, various years, fluorspar chapter.

Col. B, Exports. *Minerals Yearbooks*, various years, fluorspar chapter.

Col. C, Net imports. Col. A minus Col. B.

Col. D, Production and shipment from mines. *Minerals Yearbooks*, various years, fluorspar chapter. (The data of Col. D are given only for the years during which direct apparent consumption data were not available and had to be computed by adding Col. C and Col. D).

Col. E, Apparent consumption. *Minerals Yearbooks*, various years, fluorspar chapter, unless otherwise noted.

MC-38, NOTES

[a] Computed by adding net imports (Col. C) and production (Col. D).

[b] Reported by producers. None recorded by Bureau of Foreign and Domestic Commerce.

Col. E. For the years 1918-57 data are reported as "consumption." For the years 1910-17 they are reported as "apparent consumption."

MC-39. SALT: Net Imports and Consumption

(thousand short tons)

	Imports	Exports	Net imports (Col. A minus Col. B)	Apparent consumption
	A	B	C	D
1880	480	.6	479	1310
1881	538	1.3	536	1400
1882	432	1.2	431	1330
1883	434	1.5	432	1300
1884	454	2.0	452	1360
1885	452	2.0	450	1440
1886	395	2.4	392	1470
1887	362	2.3	360	1480
1888	312	2.7	310	1440
1889	257	2.7	254	1380
1890	257	2.5	255	1500
1891	237	2.2	235	1630
1892	229	2.6	226	1860
1893	174	2.9	171	1840
1894	217	5.4	212	2030
1895	280	5.2	274	2190
1896	260	8.9	251	2190
1897	209	7.6	201	2440
1898	186	8.6	177	2640
1899	189	12.6	176	2940
1900	200	7.5	192	3110
1901	204	7.1	197	3080
1902	191	8.7	182	3520
1903	171	8.2	163	2820
1904	171	12.8	158	3240
1905	161	34.2	127	3760
1906	175	34.0	140	4080
1907	149	30.8	118	4280
1908	160	26.6	133	4170
1909	150	40.2	109	4320
1910	137	49.0	88	4330
1911	142	48.9	93	4460
1912	140	62.4	77	4740
1913	155	70.3	84	4900
1914	131	82.3	48	4920
1915	122	80.5	41.8	5390
1916	122	84.1	38.0	6400
1917	64.9	114.0	-49.1	6930
1918	40.3	136.9	-96.6	7140
1919	59.5	119.4	-59.9	6820
1920	138	139	-1.7	6840
1921	93.1	110	-16.5	4960
1922	114	135	-21.1	6770
1923	89	126	-36.7	7090
1924	89	115	-56.0	6740
1925	86	155	-69.3	7330
1926	56.0	159	-103	7270
1927	45.0	154	-109	7460
1928	43	145	-102	7970
1929	36.4	109	-72.8	8470
1930	54.0	70	-16.5	8030
1931	33.2	99	-65.5	7290
1932	28.0	63.6	-35.6	6370
1933	30.1	105	-75.1	7520
1934	53.1	105	-52.3	7560
1935	51.2	112	-61.0	7860
1936	51.0	77	-26.0	8800
1937	46.0	70	-24.1	9220
1938	39.5	67.5	-28.0	8000
1939	46.0	124	-78.3	9200
1940	30.4	147.0	-117	10200
1941	15.4	123	-108	12600
1942	7.8	118	-110	13600
1943	1.3	146	-144	15100
1944	5.6	198	-193	15500
1945	4.6	190	-186	15200
1946	4.3	223	-219	14900
1947	1.9	188	-186	15800
1948	5.6	388	-382	16000
1949	6.3	360	-354	15200
1950	7.9	190	-182	16400
1951	4.3	439	-435	19800
1952	7.1	350	-343	19200
1953	137	250	-112	20700
1954	161	385	-224	20400
1955	186	407	-221	22500
1956	368	336	32	24200
1957	651	391	260	24100

MC-39, SOURCES

Col. A, Imports.[1] *Minerals Yearbooks*, various years, salt chapter.

Col. B, Exports.[1] *Minerals Yearbooks*, various years, salt chapter.

Col. C, Net imports. Col. A minus Col. B.

Col. D, Apparent consumption

1880-1934. Net imports plus output: Col. C plus Table MO-33, Col. A.

1935-57. *Minerals Yearbooks*, various years, salt chapter.

MC-39, NOTES

[1] The original data for the years 1880-1900 and 1905-14 are expressed in the various *Minerals Yearbooks* in barrels. The conversion factor used to express them in short tons is .140 (1 bbl. = 280 pounds). The data for the years 1901-05 were obtained from *Stat. Abstract 1911*.

MC-40. DIAMONDS: Imports

	All industrial diamonds			Gem diamonds			Imports in 1954 prices[a]		
	Million carats	Value ($ mil.)	Av. unit value	Million carats	Value ($ mil.)	Av. unit value	Industrial	Gem	All diamonds
	A	B	C	D	E	F	G	H	I
1890	(.198)	.326	(1.65)				(.69)		
1891	(.160)	.692	(4.33)				(.56)		
1892	(.190)	.676	(3.56)				(.66)		
1893	(.101)	.432	(4.28)				(.35)		
1894	(.070)	.136	(1.94)				(.24)		
1895	(.166)	.243	(1.46)				(.58)		
1896	(.085)	.145	(1.71)				(.30)		
1897	(.202)	.197	(.98)				(.70)		
1898	(.291)	.249	(.86)				(1.01)		
1899	(.670)	.620	(.93)				(2.33)		
1900	(.630)	.613	(.97)	(.24)	11.5	(48)	(2.19)	19.8	(22.0)
1901	(.870)	.838	(.96)	(.43)	20.1	(47)	(3.03)	35.5	(38.5)
1902	(.801)	.810	(1.01)	(.43)	22.0	(51)	(2.79)	35.5	(40.5)
1903	(.721)	.731	(1.01)	(.46)	23.3	(51)	(2.51)	38.0	(40.5)
1904	(.454)	.519	(1.14)	(.46)	23.7	(51)	(1.58)	38.0	(39.6)
1905	(.190)	.197	(1.04)	(.59)	30.7	(52)	(.66)	48.7	(49.4)
1906	(.145)	.255	(1.76)	(.70)	37.0	(53)	(.50)	57.8	(58.3)
1907	(.199)	.611	(3.07)	(.48)	26.9	(56)	(.69)	39.6	(40.3)
1908	(.191)	.831	(4.35)	(.20)	10.9	(54)	(.66)	16.5	(17.2)
1909	(.075)	.809	(10.79)	(.62)	35.8	(58)	(.26)	51.2	(51.5)
1910	(.055)	.269	(4.90)	(.58)	34.8	(60)	(.19)	47.8	(48.0)
1911	(.109)	.310	(2.84)	(.63)	35.3	(56)	(.38)	52.0	(52.4)
1912	(.099)	.547	(5.53)	(.55)	32.3	(59)	(.34)	45.4	(45.7)
1913	(.104)	.573	(5.51)	(.62)	37.1	(60)	(.36)	51.2	(51.6)
1914	(.089)	.656	(7.37)	(.25)	14.8	(58)	(.31)	20.6	(20.9)
1915	(.078)	.44	(5.64)	(.34)	20.2	(60)	(.27)	28.0	(28.3)
1916	(.074)	.90	(12.16)	(.49)	35.5	(73)	(.26)	40.4	(40.7)
1917	(.202)	1.45	(7.18)	(.31)	31.5	(100)	(.70)	25.6	(26.3)
1918	(.236)	1.19	(5.04)	(.18)	20.4	(113)	(.82)	14.8	(15.6)
1919	(.735)	2.40	(3.26)	.82	84.5	103.6	(2.56)	67.6	(70.2)
1920	(2.66)	4.92	(1.85)	.425	56.0	131.7	(9.26)	35.1	(44.4)
1921	(.304)	.90	(2.96)	.292	28.6	97.9	(1.06)	24.1	(25.2)
1922	(.897)	1.87	(2.08)	.598	51.6	86.3	(3.12)	49.3	(52.4)
1923	(.163)	1.29	(7.91)	.740	59.4	80.3	(.57)	61.1	(61.7)
1924	.166	1.38	8.31	.716	58.9	82.3	.58	59.1	59.7
1925	.441	2.74	6.21	.686	59.1	86.1	1.53	56.6	58.1
1926	(.303)	2.21	(7.29)	.792	64.4	81.3	(1.05)	65.3	(66.4)
1927	(.134)	2.21	(16.49)	.683	52.2	76.4	(.47)	56.3	(56.8)
1928	(.081)	2.79	(34.44)	.732	54.3	74.2	(.28)	60.4	(60.7)
1929	(.098)	4.16	(42.45)	.771	51.9	67.3	(.34)	63.6	(63.9)
1930	(.164)	2.85	(17.38)	.505	28.9	57.2	(.57)	41.7	(42.3)
1931	(.232)	2.42	(10.43)	.287	15.8	55.0	(.81)	23.7	(24.5)
1932	(.166)	1.08	(6.51)	.223	9.3	41.7	(.58)	18.4	(19.0)
1933	(.266)	1.31	(4.92)	.208	10.0	48.1	(.93)	17.2	(18.1)
1934	(.589)	2.93	(4.97)	.247	12.6	51.0	(2.05)	20.4	(22.4)
1935	(1.06)	4.39	(4.14)	.410	19.8	48.3	(3.69)	33.8	(37.5)
1936	(1.17)	4.41	(3.77)	.543	28.9	53.2	(4.07)	44.8	(48.9)
1937	(2.13)	6.76	(3.17)	.615	37.6	61.1	(7.41)	50.7	(58.1)
1938	(1.50)	4.30	(2.87)	.422	24.1	57.0	(5.22)	34.8	(40.0)
1939	(3.58)	9.76	(2.73)	.642	35.4	55.1	(12.46)	53.0	(65.5)
1940	(3.81)	11.0	(2.89)	.549	33.6	61.2	(13.26)	45.3	(58.6)
1941	(6.89)	14.9	(2.16)	.307	19.5	63.5	(23.98)	25.3	(49.3)
1942	11.21	22.1	1.97	.504	26.2	52.0	39.0	41.6	80.6
1943	12.17	22.0	1.81	.945	68.9	72.9	42.4	78.0	120
1944	13.04	23.0	1.76	1.066	72.7	68.2	45.4	87.9	133
1945	10.80	12.9	1.21	1.271	107.3	84.4	37.6	104.9	142
1946	4.70	14.5	3.08	1.649	166.6	101.0	16.4	136.0	152
1947	4.12	13.6	3.30	1.344	96.1	71.5	14.3	110.9	125
1948	10.65	33.3	3.14	1.298	100.6	77.5	37.1	107.1	144
1949	6.38	17.7	2.77	.969	69.7	71.9	22.2	79.9	102
1950	11.20	37.2	3.32	1.166	62.2	53.3	39.0	96.2	135
1951	12.29	47.2	3.84	1.135	110.2	97.1	42.8	93.6	136
1952	13.79	52.3	3.82	1.148	103.9	90.5	47.7	94.7	142
1953	13.53	49.3	3.65	1.175	107.6	91.6	47.1	96.9	144
1954	13.99	48.7	3.48	1.482	122.2	82.5	48.7	122.3	171
1955	15.11	66.3	4.39	1.774	151.6	85.5	52.6	146.4	199
1956	16.41	74.3	4.53	1.870	162.0	86.6	57.1	154.3	211
1957	12.57	51.1	4.06	1.612	142.7	88.5	43.7	133.0	177

MC-40, SOURCES

Cols. A-C, Industrial diamonds and materials

COL. A, Quantity. Sum of Cols. G and J of Worksheet 1 of this table.

COL. B, Total value. Sum of Cols. H and K of Worksheet 1.

COL. C, Price (average unit value). Ratio, Col. B/Col. A.

Cols. D-F, Gem diamonds

COL. D, Quantity

1900-18. Ratio, Col. E/Col. F. See Col. F for explanation of extrapolation of price.

1919-21. *Min. Resources 1919,* Part II, p. 169, and *1921,* Part II, p. 146, table on diamonds imported.

1922-28. *Statistical Abstract* for various years, table on merchandise imported, precious stones: Diamonds, Rough, uncut, and Cut but not set. See notes for discussion and comparison of this source with other sources.

1929-32. *Min. Yearbook 1932-33,* p. 802, chapter on precious and semiprecious stones.

1933-34. *Min. Yearbook 1934, 1935,* same chapter, table on diamonds imported into the United States, by countries: Rough or uncut and Cut but not set.

1935-57. *Minerals Yearbook,* consecutive years, chapter on gem stones, same table as before.

COL. E, Total value

1900-04. *Min. Resources 1904,* p. 987, diamonds: Rough and uncut, Set, and Unset.

1905. *Min. Resources 1905,* p. 1358, same listings.

1906-09. *Min. Resources 1909,* Part II, p. 808, same listings.

1910-16. *Min. Resources 1916,* Part II, p. 896, diamonds: Rough or uncut and Unset.

1917-19. *Min. Resources 1919,* Part II, p. 169, table on diamonds imported and entered for consumption. The table directly below it gives the earliest (1919) available carat data. We have used the second table for 1919 carat *and* value data. See notes, below, on differences in coverage.

1920-57. Same sources as for Col. D, above.

COL. F, Price (average unit value)

1900-18. Estimated by extrapolation with the general wholesale price index (BLS) on the basis of the 1919-23 average ratio of diamond prices to the general wholesale price index (ratio, 1.32). See notes below and in Worksheet 1.

1919-57. Ratio, Col. E/Col. D.

Cols. G-I, Imports weighted by 1954 prices

COL. G, Industrial diamond imports. Col. A multiplied by $3.48 (1954 price from Col. C).

COL. H, Gem diamond imports. Col. D multiplied by $82.5 (1954 price from Col. F).

COL. I, All diamond imports. Sum of Cols. G and H.

MC-40, NOTES

[a] Millions of dollars.

( ) Estimated, or derived from estimated figures. See sources for Cols. D and F, above, and note in Worksheet 1. Estimates are used only where there are no data available.

Industrial diamonds and materials. See notes in Worksheet 1.

Gem diamonds. As with the industrial diamonds, there is irregularity in coverage and probably in the average quality of the stones covered.

Owing to the rigidly controlled market, changing quality, and other influences, price data are hard to interpret.

There is a slight shift in coverage in 1919, when we began using "Diamonds imported" instead of "Diamonds . . . imported for consumption" in order to make use of the carat data. The new table, first appearing in *Min. Resources 1919,* is for "diamonds imported" and has a larger ($146,000) value figure than the preceding table (old classification). No attempt has been made to adjust for this difference.

There is another shift in coverage in 1929, when the source changes from *Statistical Abstracts* to *Mineral Resources* (later *Minerals Yearbooks*). A comparison of the two sources for the overlapping period shows:

	Statistical Abstract		*Minerals Yearbook*	
	carats	*value*	*carats*	*value*
1929	.771	51.9	.764	51.4
1930	.505	28.9	.498	29.2
1931	.287	15.8	.287	15.8
1932	.223	9.3	.223	9.3
1933	.208	10.0	.210	10.0
1934	.247	12.6	.247	12.6

We have not been able to account for these discrepancies.

There is no disagreement between the *Mineral Resources* and *Statistical Abstract* data for the overlapping period prior to 1922.

See the notes in Worksheet 1 for discussion of undercounting because of illegal imports and other problems.

MC-40, WORKSHEET 1. INDUSTRIAL DIAMOND MATERIALS: Imports

	Dust			Bort			Dust and bort			Industrial diamonds		
	1000 carats	Value ($1000)	Av. price	1000 carats	Value ($1000)	Av. price	1000 carats	Value ($1000)	Av. price	1000 carats	Value ($1000)	Av. price
	A	B	C	D	E	F	G	H	I	J	K	L
1886										(.5)	9	(19)
1887										(.5)	9	(19)
1888										(.5)	10	(19)
1889										(.4)	8	(19)
1890							(190)	179	(.96)	(7.7)	147	(19)
1891							(130)	126	(.96)	(30)	566	(19)
1892							(160)	144	(.92)	(30)	532	(18)
1893							(81)	74	(.92)	(20)	358	(18)
1894							(65)	54	(.82)	(5.1)	82	(16)
1895							(160)	136	(.87)	(6.3)	107	(17)
1896							(80)	66	(.82)	(4.9)	79	(16)
1897							(200)	167	(.82)	(1.9)	30	(16)
1898							(290)	241	(.82)	(.5)	8	(16)
1899							(670)	618	(.82)	(.1)	2	(18)
1900							(630)	605	(.96)	(.4)	8	(19)
1901							(870)	832	(.96)	(.3)	6	(19)
1902							(800)	799	(1.00)	(.5)	11	(20)
1903							(720)	720	(1.00)	(.5)	11	(20)
1904							(450)	446	(1.00)	(3.7)	73	(20)
1905							(190)	190	(1.00)	(.3)	7	(20)
1906							(140)	151	(1.10)	(5.0)	104	(21)
1907							(180)	200	(1.10)	(19)	411	(22)
1908							(160)	180	(1.10)	(31)	651	(21)
1909							(42)	50	(1.20)	(33)	759	(23)
1910							(46)	55	(1.20)	(8.9)	214	(24)
1911							(100)	110	(1.10)	(9.1)	200	(22)
1912							(79)	94	(1.20)	(20)	453	(23)
1913							(84)	101	(1.20)	(20)	472	(24)
1914							(64)	77	(1.20)	(25)	579	(23)
1915							(63)	76	(1.20)	(15)	367	(24)
1916							(45)	67	(1.50)	(29)	836	(29)
1917							(175)	350	(2.00)	(27)	1098	(40)
1918							(220)	476	(2.20)	(16)	718	(44)
1919							(710)	1420	(2.00)	25	984	38.89
1920							(2600)	3387	(1.30)	61	1528	24.97
1921							(290)	466	(1.60)	14	436	32.30
1922							(860)	1029	(1.20)	37	840	22.89
1923							(130)	228	(1.70)	33	1066	32.40
1924	[a]111	42	.37	22.9	218	9.52	134	260	1.94	33	1117	34.37
1925	[a]290	29	.10	104	731	7.03	394	760	1.93	47	1977	42.42
1926	(244)	63	(.26)	17.6	208	11.82	(261)	271	(1.04)	42	1940	46.74
1927	(98)	28	(.29)	1.7	34	19.88	(100)	62	(.62)	34	2148	62.26
1928	(42)	13	(.32)	1.0	18	17.00	(43)	31	(.72)	38	2757	71.98
1929	(46)	16	(.35)	4.6	73	15.91	(51)	89	(1.75)	47	4068	86.74
1930	(13)	5	(.39)	5.1	86	16.86	(18)	91	(5.05)	146	2757	18.88
1931	(6)	2	(.42)	1.1	18	16.18	(7)	20	(2.86)	225	2401	10.67
1932	(1)	*	(.45)	1.0	12	12.50	(2)	13	(6.50)	164	1062	6.47
1933	*	*	(.48)	3.1	47	15.13	(3)	47	(15.67)	263	1263	4.80
1934	(61)	31	(.51)	1.8	38	21.00	(63)	69	(1.10)	526	2862	5.44
1935	(102)	55	(.54)	3.0	43	14.43	(105)	98	(.93)	955	4294	4.50
1936	(4)	2	(.57)	3.8	80	20.97	(8)	82	(10.25)	1166	4329	3.71
1937	(242)	145	(.60)	4.2	73	17.40	(246)	218	(.89)	1886	6542	3.47
1938	(99)	63	(.64)	1.2	19	16.00	(100)	82	(.82)	1396	4213	3.02
1939	(6)	4	(.67)	1.4	35	24.71	(7)	39	(5.57)	3569	9726	2.73
1940	(4)	2	(.70)	.8	20	24.62	(5)	22	(4.40)	3809	11027	2.89
1941	(4)	3	(.73)	.5	16	32.40	(4)	19	(4.75)	6882	14909	2.17
1942	1	1	.76	2.2	28	12.50	3	28	8.84	11204	22058	1.97
1943	90	74	.83	1.5	26	17.60	91	101	1.11	12084	21891	1.81
1944	42	59	1.39	*	1		42	60	1.42	12615	22894	1.81
1945	62	47	.76	1.1	31	27.91	63	78	1.23	10734	12824	1.19
1946	78	129	1.66	2.1	64	30.33	80	193	2.42	4653	14406	3.10
1947	116	230	1.98	1.7	96	56.47	118	326	2.76	3999	13312	3.33
1948	226	618	2.73	.6	69	115.00	227	687	3.03	10421	32581	3.13
1949	101	250	2.47	1.1	80	72.73	102	330	3.24	6279	17392	2.77
1950	159	208	1.30	2.7	176	65.18	162	384	2.37	11039	36793	3.33
1951	167	472	2.83	6.7	413	61.64	173	885	5.12	12121	46328	3.82
1952	224	793	3.54	11.6	391	34.60	235	1184	5.04	13469	51117	3.80
1953	749	2107	2.81	7.9	293	37.09	757	2400	3.17	12769	46882	3.67
1954	181	503	2.78	2.4	182	75.83	183	685	3.74	13807	48018	3.48
1955	153	435	2.84	2.8	205	73.21	156	640	4.10	14953	65672	4.39
1956	239	698	2.92	9.1	333	36.60	248	1031	4.16	16166	73292	4.53
1957	386	1186	3.07	6.1	275	45.08	392	1461	3.73	12178	49685	4.08

MC-40, Worksheet 1, SOURCES

Cols. A-C, Diamond dust

COL. A, Quantity
1924-25. See note a.
1926-41. Ratio, Col. B/Col. C.
1942-57. Various *Minerals Yearbooks*, abrasives chapters.

COL. B, Total value
1924-30. Various *Mineral Resources*, abrasive materials chapters.
1931-57. Various *Minerals Yearbooks*, abrasives chapters.

COL. C, Average value
1924-25. Ratio, Col. B/Col. A.
1926-41. Computed by straight-line interpolation between 1924-25 average and 1942.
1942-57. Various *Minerals Yearbooks*, abrasives chapters.

Cols. D-F, Bort (manufactured) (diamond dies)

COL. D, Quantity
1924-30. Various *Mineral Resources*, abrasive materials chapters.
1931-57. Various *Minerals Yearbooks*, abrasives chapters.

COL. E, Total value. Same as Col. D.

COL. F, Average value. Ratio, Col. E/Col. D.

Cols. G-I, Dust and bort

COL. G, Quantity
1890-1923. Ratio, Col. H/Col. I.
1924-57. Sum of Cols. A and D.

COL. H, Total value
1890-1904. *Min. Resources 1904*, p. 987, column labeled "Dust."[1]
1905-16. Various *Mineral Resources*, Part II, chapters on gems and precious stones.
1917-19. Various *Mineral Resources*, Part I, summary chapters, section on gems and precious stones.
1920-25. Various *Mineral Resources*, Part II, abrasives chapters.
1926-57. Sum of Cols. B and E.

COL. I, Average value
1890-1923. Extrapolated with the industrial diamonds price (Col. L) on the basis of the average of the 1924-25 ratios of dust and bort price to industrial diamonds price (.5097). See notes, below.
1924-57. Ratio, Col. H/Col. G.

Cols. J-L, Industrial diamonds[2]

COL. J, Quantity
1886-1918. Ratio, Col. K/Col. L.
1919-28. Various *Statistical Abstracts*, table on merchandise imported, etc., precious stones, glaziers' and engravers' unset, and miners'. (Agrees with *Mineral Resources* data where available.)
1929-30. Various *Mineral Resources*, abrasive materials chapters.
1931-51. Various *Minerals Yearbooks*, abrasives chapters.
1952-57. *Ibid.*, table on Industrial diamond imported for consumption, etc., other industrial diamond plus crushing bort plus carbonado and ballas.

COL. K, Total value
1886-1904. *Min. Resources 1904*, p. 987, column labeled "Glaziers'."
1905-16. Various *Mineral Resources*, Part II, gems and precious stones chapters.
1917-19. Various *Mineral Resources*, Part I, summary chapters, gems and precious stones section, glaziers' diamonds.
1920-57. Same as Col. J.

COL. L, Average value
1886-1918. Extrapolated with the general wholesale price index (BLS) on the basis of the 1919-25 (excluding 1920, 1922) average ratio of the general wholesale price index to diamond prices (ratio, .521).
1919-57. Ratio, Col. K/Col. J.

MC-40, Worksheet 1, NOTES

( ) Estimated, or derived from estimated figures. Estimates are based on straight line interpolation or on extrapolation with the general wholesale price index (BLS). See sources, Col. C, Col. I, and Col. L.

* Less than 500.

[a] Converted to carats from: 1924, 49 lb.; 1925, 128 lb. The heading "pounds" was carried by *Mineral Resources* and *Minerals Yearbooks* for over a decade, though these two years are the only ones with quantity data. These figures can be located in the official import data of the Department of Commerce, *Foreign Commerce and Navigation of the United States*, 1924 and 1925.

[1] The data in this source, labeled "Dust," agrees with later data labeled "Dust and bort" for overlapping period.

[2] Despite the varying terminology, the data from the different sources coincide for overlapping periods.

Dust. Diamond dust is the powder produced in diamond cutting and is used in grinding and polishing various materials.

Bort. Diamond bort is variously defined as "chips," "chips and dust," "industrial quality diamonds," and "diamond dies" ("manufactured bort"). As indicated by the variability of average price, the quality of "bort" is quite variable. Starting in 1951, the *Minerals Yearbooks* give "Crushing bort (including all types of bort suitable for crushing)" as a separate category. We have included it in our "industrial diamond" data, since it appears to have been so included by the Bureau of Mines before 1951.

Dust and bort. Due to the similarity in dust and bort, this category covering both subgroups probably removes some variability caused by changes in classifications, as between "dust" and "bort," and by the increasing American preparation of diamonds for use. For the early years, particularly prior to 1897, there may be serious fluctuation of coverage.

Industrial diamonds. There is undoubtedly great irregularity in the coverage of these columns and also in the quality of the stones covered. The data from *Min. Resources 1904* have several notes, as follows:

(continued on next page)

MC-40, Worksheet 1, NOTES (continued)

"Including also engravers', not set, and jewels to be used in the manufacture of watches, from 1891 to 1894; from 1894 to 1896 miners' diamonds are also included."

1897: "Includes miners' and engravers' not set."

These notes hint that, for other than the years specified, engravers' and miners' are *not* included, and therefore this data does not compare with later data in which these items are consistently included. Furthermore, it is possible that some stones destined for industrial use are included under "Diamonds and other stones not set."

Even today, it appears that the classification of diamond imports is highly irregular. A Belgian expert, Antoine Moyar, of Forminiere, Inc., in *The Diamond Industry in 1956-57* ("Edited by Vlaams Economisch Verbond, Antwerp," no date) says (pp. 92-93):

"Compared with 1955 the import of crushing bort seems to have increased substantially during 1956, but this in all probability results from a confusion of categories which took place in 1955 in the statistics of the customs and is consequently only apparent. . . . In fact, the entire world probably does not produce the 7 or 8 million carats of industrial stones declared in 1955 and 1956 as being imported into the United States, when on the contrary the import of bort seems to be underestimated, compared to the importance of world production, of which it is known the United States absorbs eight-tenths. The 1957 figure for industrials shows that an adjustment has been made."

Smuggling also makes the figures of somewhat doubtful accuracy. Moyar says (*ibid.*, p. 103):

"The international diamond trade comprises, besides and parallel to, official transactions, a clandestine trade, whose activities escape commercial statistics, but which is too important to be ignored. . . .

"A specialist on these questions, Dr. Franz Pick, editor to the 'World Currency Report' has been kind enough to establish for our benefit the estimated figure of illegal import of polished diamonds into the United States in 1956 and 1957 from his files and research materials:

Estimated illegal imports of polished diamonds into the United States

1952....$25,000,000	1955....$12,000,000
1953.... 17,000,000	1956.... 10,000,000
1954.... 16,000,000	1957.... 7,000,000"

While these figures are apocryphal, and show a remarkable decline over a five-year period, the fact that they run from 25% down to 5% of the figures in Col. E of Table MC-40 gives perhaps some idea of the possible errors in our data.

In an effort to estimate quantity in carats of diamonds imported prior to 1919, we have extrapolated the price with the general wholesale price index (BLS) (see Col. L). We divided the dollar value of industrial diamonds imported by these estimated prices to get an estimate of quantity (in carats) of imports for 1886-1918. This method is of course very crude, since quality and price may have fluctuated widely.

Minerals:
Employment and Employment/Output Ratio (ML)

ML-1. MINERALS: Employment

(thousands)

	Mineral fuels, workers	Nonmetals, production workers	Metal mining, employment	Census, production and development workers	Fabricant, manpower	Preferred series, all minerals employment (Cols. A+B+C)
	A	B	C	D	E	F
1870	94	(16)	40		198	(150)
1880	178	45	63	296	314	286
1889	332	83	103	[a]543		518
1890	343				475	
1891	358					
1892	369					
1893	392					
1894	407					
1895	414					
1896	425					
1897	430					
1898	435					
1899	445		n.a.			
1900	485				760	
1901	525					
1902	561	101	129	[b]582		791
1903	613	102				
1904	643	103				
1905	678	106				
1906	693	109				
1907	737	110				
1908	748	110				
1909	774	113	154	981		1041
1910	794	111			1054	
1911	798	108				
1912	805	105				
1913	840	106				
1914	865	96				
1915	769	95				
1916	830	90				
1917	879	86				
1918	892	72				
1919	917	74	140	987		1131
1920	932	84	134		1230	1150
1921	984	73	84			1141
1922	1016	76	102			1194
1923	1045	91	121			1257
1924	950	95	122			1167
1925	917	89	122			1128
1926	936	88	124			1148
1927	942	87	114			1143
1928	853	85	109			1047
1929	823	83	116	n.a.		1022
1930	801	80	96		1150	977
1931	716	68	74			858
1932	641	52	45			738
1933	657	53	46			756
1934	740	55	56			851
1935	740	60	84			884
1936	769	68	93			930
1937	793	72	114			979
1938	739	64	101			904
1939	712	68	113	774		893
1940	736	72	124		[c]1110	932
1941	761	83	131			975
1942	741	88	121			950
1943	688	74	107			869
1944	684	64	90			838
1945	676	62	76			814
1946	709	74	78			861
1947	748	80	89			917
1948	787	83	89			959
1949	770	83	83			936
1950	753	87	83		[c]928	923
1951	732	88	86			906
1952	708	86	84			878
1953	667	87	91			845
1954	594	89	83	667		766
1955	597	90	82			769
1956	613	93	87			793
1957	614	94	93			801

ML-1, SOURCES

Col. A, Table ML-4, Col. D, transcribed.
Col. B, Table ML-26, Col. K, transcribed.
Col. C, Table ML-12, Col. J, transcribed.
Col. D, Bureau of the Census, *1954 Census of Mineral Industries*, p. A-1, "Comparative statistics for mineral operations in the U.S.—Comparative statistics for all operations: Production and development workers."
Col. E
1870-1940. Solomon Fabricant: "The Changing Industrial Distribution of Gainful Workers" (in National Bureau of Economic Research, *Studies in Income and Wealth*, Vol. XI, New York, 1949; based on *Census of Population*, occupation data).
1950. *1950 Census of Population*, Special Report P-E 1C, Occupation by Industry, Table 1.
Col. F, Preferred series. Sum of Cols. A through C.

ML-1, NOTES

( ) Extrapolation.
[a] Includes "Production and development workers" and "All other employees."
[b] Reduced to a 300-day-year basis.
[c] Includes ages 14 and over. Earlier data include ages 10 and over.

The discrepancy between our total employment figure (Col. F) and *Census of Mineral Industries* (Col. D) is due principally to differences in the classes of employees covered and in the industry definitions. Differences in employee coverage are due to the fact that our series were compiled from a number of somewhat inconsistent series: e.g., "Workers," "Production workers," and "Men employed," which include some workers classified by the Census under "other employees" or "proprietors." Differences in industry definitions arise because Census has enumerated by "establishments," with some manufacturing workers being classified with mining if the plant were principally doing mining and concentrating; and some doing mining work are counted in "manufacturing" if that is the principal business of the "establishment." Moreover, Census has adopted various "cut-off" points to eliminate small firms (cf. notes to our Table ML-12).

A rough adjustment for differences in coverage is offered below:

	1954	*1939*	*1919*	*1909*
Col. F (our series)	766	893	1131	1041
Minus: Census,[a]				
"All other employees"	139	82	75	46
Total	627	811	1056	995
Col. D (Census of Mines)	667	774	987	981

[a] *1954 Census of Mineral Industries*, p. A-5.

The occupation data from the *Census of Population* are different because:

1. Occupations must be allocated by judgment as to probable industry.

2. Individuals reporting their occupations do not always give information that agrees with their employers' payrolls (sometimes they have been unemployed, and reported *usual* occupation).

3. The time period covered is different: occupations are generally as of a point in time; employer data are averages over a year, or at several times during the year.

In view of the significant differences among the three series, the appearance of agreement among them is to some extent spurious—it conceals offsetting differences.

ML-2. MINERALS: Employment/Output

	Employment (1000 men)	Output ($ bil., 1954 prices)	Preferred series, employment/output ratio (men per $1000)		
			Output in 1902 prices	Output in 1929 prices	Output in 1954 prices
	A	B	C	D	E
1870	180	.420	1.37	.83	.43
1871		.426			
1872		.502			
1873		.554			
1874		.543			
1875		.544			
1876		.560			
1877		.660			
1878		.627			
1879		.744			
1880	286	.806	1.271	.720	.355
1881		.867			
1882		.974			
1883		1.03			
1884		1.07			
1885		1.09			
1886		1.18			
1887		1.33			
1888		1.50			
1889	518	1.50	1.285	.706	.345
1890		1.64			
1891		1.74			
1892		1.82			
1893		1.78			
1894		1.70			
1895		1.90			
1896		1.93			
1897		1.98			
1898		2.10			
1899		2.37			
1900		2.49			
1901		2.66			
1902	791	2.71	1.039	.623	.292
1903		3.17			
1904		3.18			
1905		3.60			
1906		3.71			
1907		4.19			
1908		3.82			
1909	1041	4.26	.875	.513	.244
1910		4.60			
1911		4.54			
1912		4.86			
1913		5.19			
1914		4.81			
1915		5.10			
1916		5.79			
1917		6.17			
1918		6.23			
1919	1131	5.39	.759	.445	.210
1920	1150	6.16	.680	.401	.187
1921	1141	4.98	.827	.486	.229
1922	1194	5.32	.796	.480	.224
1923	1257	7.25	.619	.369	.173
1924	1167	6.76	.614	.362	.173
1925	1128	7.02	.567	.343	.161
1926	1148	7.56	.539	.306	.152
1927	1143	7.63	.529	.315	.150
1928	1047	7.56	.487	.290	.138
1929	1022	8.20	.437	.261	.125
1930	977	7.18	.477	.285	.136
1931	858	6.02	.499	.297	.143
1932	738	4.90	.527	.314	.151
1933	756	5.38	.491	.295	.141
1934	851	5.73	.519	.311	.149
1935	884	6.16	.494	.301	.143
1936	930	7.25	.443	.269	.128
1937	979	8.13	.411	.252	.120
1938	904	6.90	.445	.271	.131
1939	893	7.68	.405	.241	.116
1940	932	8.55	.371	.227	.109
1941	975	9.35	.356	.217	.104
1942	950	9.94	.329	.199	.096
1943	869	10.14	.298	.179	.086
1944	838	10.61	.276	.165	.079
1945	814	10.29	.275	.165	.079
1946	861	10.10	.294	.176	.085
1947	917	11.34	.277	.168	.081
1948	959	11.84	.276	.167	.081
1949	936	10.34	.305	.184	.091
1950	923	11.50	.271	.163	.080
1951	906	12.69	.240	.145	.071
1952	878	12.47	.235	.141	.070
1953	845	12.74	.221	.133	.066
1954	766	12.17	.208	.125	.063
1955	769	13.43	.189	.114	.057
1956	793	14.23	.184	.111	.056
1957	801	14.28	.185	.111	.056

ML-2, SOURCES

Index in 1954 Prices:

Col. A, Employment in mining. Table ML-1, Col. F, transcribed (1870 extrapolated by Fabricant's estimates based on the Census of Occupations: Table ML-1, Col. E).

Col. B, Output, 1954 price weights. Table MO-1, Col. G, transcribed.

Cols. C and D, Preferred series, employment/output, 1902 and 1929 prices. Computed as Col E, except that outputs in 1902 and 1929 prices were used in place of Col. B.

Col. E, Preferred series, employment/output, 1954 prices. Ratio, Col. A/Col. B.

ML-2, NOTES

The 1870 employment estimate has a range of error of perhaps 20%, as will be seen by comparing the 180 used here with the 150 in Table ML-1. To reach a firm figure would require considerably more research on the differences between the censuses of mining and of occupations, on the methods used to allocate occupations, by industries, and on our other sources of information for that year.

ML-3. AVERAGE EMPLOYMENT/OUTPUT IN MINING

(Thousands of men required to produce 1954 outputs)

	Oil & gas	Bituminous coal	Anthracite	Total fuels (Sum of Cols. A,B,C)	Iron	Copper	Lead & zinc	Gold & silver	Total metals (Sum of Cols. E,F,G,H)	Stone	Sand & gravel	Sulfur	Phosphate rock	Total nonmetals (Sum of Cols. J,K,L,M)	Total minerals
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1870	2931	706	76	3713	306	326	a32	17.6	682	(183)	b228	c233	a185	829	5224
1871	a2788	a707	a76	3571	a308	a310	a32	a17.9	668	a187	b221	c225	a182	815	5054
1872	a2645	a709	a75	3429	a316	a294	a31	a18.2	653	a190	b213	c218	a178	799	4881
1873	a2501	a710	a75	3286	a312	a279	a31	a18.6	641	a194	b206	c210	a175	785	4712
1874	a2358	a712	a74	3144	a315	a263	a31	a18.9	628	a197	b199	c203	a171	770	4542
1875	a2215	a713	a74	3002	a318	a248	a31	a19.2	616	a201	b191	c195	a168	755	4373
1876	a2072	a715	a73	2860	a321	a232	a30	a19.6	603	a204	b184	c187	a164	739	4202
1877	a1929	a716	a73	2718	a324	a217	a30	a19.9	591	a208	b176	c180	a161	725	4034
1878	a1785	a718	a72	2575	a327	a201	a30	a20.2	578	a211	b169	c172	a157	709	3862
1879	a1642	a719	a72	2433	a330	a186	a29	a20.6	566	a215	b162	c165	a154	696	3695
1880	1499	721	71	2291	333	170	a29	20.9	553	(219)	b154	c157	150	680	3524
1881	a1491	a725	a72	2288	a317	a158	a29	a24	528	a210	b152	c155	a147	664	3480
1882	a1483	a730	a73	2286	a301	a146	a29	a27	503	a202	b150	c153	a143	648	3437
1883	a1474	a734	a73	2281	a285	a134	a28	a31	478	a193	b148	c151	a140	632	3391
1884	a1466	a738	a74	2278	a270	a123	a28	a34	455	a185	b146	c149	a136	616	3349
1885	a1458	a743	a75	2276	a255	a111	a28	a37	431	a176	b145	c148	a133	602	3309
1886	a1450	a747	a76	2273	a240	a 99	a27	a41	407	a168	b143	c146	a129	586	3266
1887	a1442	a751	a76	2269	a225	a 88	a27	a44	384	a159	b141	c144	a126	570	3223
1888	a1433	a755	a77	2265	a210	a 76	a27	a47	360	a151	b139	c142	a122	554	3179
1889	1425	760	78	2263	195	64	a27	51	337	143	b137	140	118	538	3138
1890	a1404	678	79	2161	a186	a 64	a26	a49	325	a146	b132	c134	a113	525	3011
1891	a1382	686	72	2140	a178	a 64	a26.1	a47	315	a149	b130	c133	a108	520	2975
1892	a1361	659	72	2092	a170	a 65	a25.8	a45	305	a153	b127	c130	a103	513	2910
1893	a1340	702	72	2114	a162	a 65	a25.5	a43	295	a156	b128	c130	a 98	512	2921
1894	a1318	808	74	2200	a154	a 65	a25.2	a41	285	a159	b131	c134	a 92	516	3001
1895	a1297	698	72	2067	a146	a 66	a24.9	a39	276	a163	b124	c127	a 87	501	2844
1896	a1276	694	80	2050	a139	a 66	a24.6	a37	266	a166	b123	c125	a 82	496	2812
1897	a1255	659	83	1997	a132	a 66	a24.3	a35	257	a169	b120	c122	a 77	488	2742
1898	a1233	604	80	1917	a125	a 67	a24.1	a33	249	a173	b116	c118	a 72	479	2645
1899	a1212	549	68	1829	a118	a 67	a23.7	a31	239	a176	b111	c113	a 66	466	2534
1900	a1191	561	73	1825	a111	a 67	a23.4	a29	230	a179	b110	c112	a 61	462	2517
1901	a1169	592	63	1824	a104	a 68	a23.1	a27	222	a182	b110	c112	a 56	460	2506
1902	1148	557	104	1809	98	68	22.8	25	213	185	b108	c110	51	454	2476
1903	a1097	576	58	1731	a 97	a 68	a22.5	a24.1	211	a181	b104	c106	a 49	440	2382
1904	a1045	615	62	1722	a 96	a 69	a22.2	a23.2	210	a177	b103	a 90	a 48	418	2350
1905	a 994	572	62	1628	a 96	a 69	a21.9	a22.3	209	a174	b 99	a 73	a 47	393	2230
1906	a 943	545	66	1554	a 95	a 70	a21.6	a21.4	208	a170	b 95	a 56	a 46	368	2130
1907	a 892	510	57	1459	a 94	a 70	a21.3	a20.5	206	a166	b 90	a 40	a 45	341	2006
1908	a 840	608	61	1509	a 93	a 71	a21.0	a19.6	204	a162	b 92	a 24	a 44	322	2035
1909	789	564	63	1416	a 93	71	20.7	18.7	203	158	b 87	7.5	43	296	1912
1910	a 801	521	58	1380	a 92	a 76	a20.4	a18.1	206	a146	b85	a 7.3	a 42	280	1866
1911	a 814	533	56	1403	91	80	a20.1	a17.5	208	134	b86	a 7.1	a 41	268	1879
1912	a 826	478	60	1364	71	82	a19.8	a17.0	190	130	b83	a 6.9	a 40	260	1814
1913	a 839	470	56	1365	71	90	a19.5	a16.4	197	125	b83	a 6.7	a 39	254	1816
1914	a 851	541	58	1450	93	76	a19.2	a15.8	204	119	b87	6.5	38	250	1904
1915	a 864	494	58	1416	61	67	a19.0	a15.2	162	129	b84	a 6.3	a 37	256	1834
1916	a 876	439	53	1368	59	62	a18.7	a14.6	154	102	b80	a 6.1	a 36	224	1746
1917	a 889	427	45	1361	63	65	a18.4	a14.1	160	112	b80	a 5.9	a 35	233	1754
1918	a 901	416	43	1360	62	62	a18.1	a13.5	155	121	b80	5.6	34	241	1756
1919	914	521	51	1486	66	59	17.9	12.9	156	119	b86	5.3	33	243	1885
1920	a 864	443	47	1354	58	58	17.3	11.3	145	118	b79	a 5.3	22	224	1723
1921	a 813	627	52	1492	86	71	14.8	13.5	185	124	b88	a 5.3	34	251	1928
1922	a 763	639	84	1486	59	54	15.5	10.9	139	99	b84	a 5.3	20	208	1833
1923	a 712	490	49	1251	47	45	15.2	10.9	118	94	b71	a 5.3	15.0	185	1554
1924	a 662	502	53	1217	56	41	16.8	10.8	125	95	b70	a 5.3	16.9	187	1529
1925	a 612	443	75	1130	45	41	16.2	11.3	113	75	b64	a 5.2	13.2	158	1401
1926	a 561	408	57	1026	40	40	16.9	11.1	108	72	b58	a 5.2	13.3	149	1283
1927	a 511	451	60	1022	44	37	15.4	9.9	106	66	b58	a 5.2	12.3	142	1270
1928	a 460	408	62	930	38	35	15.1	10.3	98	64	53	5.2	11.9	134	1162
1929	410	368	60	838	33	38	14.8	9.2	95	57	48	5.2	11.0	121	1054
1930	426	412	63	901	41	41	11.8	10.1	104	58	a62	a 5.1	10.6	136	1141
1931	366	463	68	897	57	41	11.1	11.9	121	65	a77	a 5.0	13.4	161	1179
1932	356	514	71	941	100	40	10.5	11.4	162	71	a91	a 4.9	14.2	181	1284
1933	363	494	62	919	67	34	9.0	13.4	123	83	106	a 4.8	11.9	206	1248
1934	468	498	56	1022	52	36	9.7	14.3	112	69	99	a 4.7	13.1	186	1320
1935	431	486	57	974	38	29	10.2	25.8	103	90	75	a 4.6	13.1	183	1260
1936	423	427	54	904	32	25	10.3	20.1	87	64	64	a 4.5	12.4	145	1136
1937	388	431	56	875	28	27	a11.0	a 20.2	86	67	63	a 4.4	11.3	146	1107
1938	409	498	61	968	54	32	a11.7	a 20.4	118	64	70	a 4.3	a11.4	150	1236
1939	382	419	53	854	33	28	12.4	20.5	94	54	65	4.1	11.5	135	1083
1940	374	374	52	800	26	25	13.0	19.4	83	54	66	a 4.1	a11.0	135	1018
1941	377	348	47	772	25	26	12.2	18.8	82	50	55	a 4.0	a10.5	119	973
1942	345	311	41	697	26	25	12.7	13.6	77	48	55	a 4.0	a10.0	117	891
1943	311	276	39	626	28	24	15.4	6.0	73	43	59	a 3.9	a 9.5	115	814
1944	308	249	36	593	27	21	14.3	5.9	68	39	59	a 3.8	a 9.1	111	772
1945	311	260	39	610	24	22	14.4	9.2	69	38	56	a 3.8	a 8.6	106	785
1946	328	291	38	657	30	27	17.3	11.0	85	46	46	a 3.7	a 8.2	104	846
1947	325	260	41	626	27	22	15.6	8.7	73	41	47	a 3.6	a 7.7	99	798
1948	321	289	39	649	27	23	15.1	8.4	73	40	44	a 3.6	a 7.3	95	817
1949	337	388	52	777	29	24	13.7	8.5	75	45	46	a 3.5	a 6.8	101	953
1950	316	316	49	681	26	20	12.4	6.8	75	42	41	a 3.4	a 6.4	93	849
1951	303	274	47	624	24	20	13.4	6.4	64	37	38	a 3.3	a 5.9	84	772
1952	313	281	47	641	24	20	13.5	5.8	63	35	37	a 3.3	a 5.5	81	785
1953	313	251	54	618	24	20	13.2	5.5	62	35	36	a 3.2	a 5.0	79	759
1954	323	227	44	594	32	22	13.6	5.1	73	31	35	3.1	4.6	74	741
1955	315	190	38	543	23	19	13.2	4.1	59	26	34	a 3.0	a 4.1	67	669
1956	311	178	32	521	25	20	11.3	4.1	60	27	32	a 2.9	a 3.7	66	647
1957	310	182	36	528	26	20	12.4	4.9	63	26	34	a 2.9	a 3.2	66	657

ML-3, SOURCES

COL. A, Petroleum and natural gas. Table ML-7, Col. E, times 7.31 (1954: ratio of employment (Col. B) to employment/output ratio (Col. E)).

COL. B, Bituminous coal. Table ML-9, Col. C, times 392 (1954: ratio of employment (Col. B) to employment/output ratio (Col. C)).

COL. C, Anthracite. Table ML-11, Col. C, times 29.1 (1954: ratio of employment (Col. B) to employment/output ratio (Col. C)).

COL. D, Fuels. Sum of Cols. A, B, C.

COL. E, Iron. Table ML-15, Col. C, times 78.1 (1954: ratio of employment (Col. B) to employment/output ratio (Col. C)).

COL. F, Copper. Table ML-19, Col. C, times 850 (1954: ratio of employment (Col. B) to employment/output ratio (Col. C)).

COL. G, Lead and zinc. Table ML-21, Col. C, times .795 (1954: ratio of production and development workers (Col. B) to employment/output ratio (Col. C)). (Straight-line extrapolation at 1909-1902 rate from 1902 to 1870.)

COL. H, Gold and silver. Table ML-25, Col. C, times 110 1954: ratio of employment (Col. B) to employment/output ratio (Col. C)).

COL. I, Metals. Sum of Cols. E, F, G, H.

COL. J, Stone. Table ML-29, Col. S, times 524 (1954: ratio of employment (Table ML-28, Col. S) to employment/output ratio (Table ML-29, Col. S)).

COL. K, Sand and gravel. Table ML-31, Col. F, times 400 (1954: ratio of employment (Col. C) to employment/output ratio (Col. F)).

COL. L, Sulfur. Table ML-34, Col. C, times 5.58 (1954: ratio of production and development workers (Col. A) to employment/output ratio (Col. C)).[c]

COL. M, Phosphate rock. Table ML-33, Col. E, times 12.8 1954: ratio of production workers (Col. C) to employment/output ratio (Col. E)).

COL. N, Nonmetals. Sum of Cols. J, K, L, M.

COL. O, Total minerals. Sum of Cols. A, B, C, E, F, G, H, J, K, L, M.

ML-3, NOTES

( ) Rough estimate (see source).

[a] Interpolated or extrapolated figure (straight line).

[b] Sand and gravel linked to total minerals at 1929.

[c] Sulfur extrapolated 1889-1870 and 1889-1903 by total minerals employment/output index; 1903-09 by straight line interpolation. (The revolutionary Frasch Process was introduced in 1904.)

This table provides a weighted average of the increases in productivity (decline in employment/output) due to advances in technology, training of workers, increased availability of resources, and other factors operating within each industry. Table ML-2 measures the ratio of aggregate employment to aggregate output, which implicitly introduces another factor causing a rise in productivity, in addition to the factors mentioned above: This factor is the increased output per man which results from a relative shift of workers from industries of low to industries of high output per man.

ML-4. MINERAL FUELS: Employment

(thousands)

	Petroleum and natural gas, persons engaged	Bituminous coal, men employed	Anthracite, production workers	All mineral fuels, workers
	A	B	C	D
1870	5.9	36	52	94
1880	15	93.4	70	178
1889	24	186	122	332
1890		192	126	343
1891		206	126	358
1892		213	129	369
1893		230	133	392
1894		245	132	407
1895		240	143	414
1896		244	149	425
1897		248	150	430
1898		256	146	435
1899		271	140	445
1900		304	144	485
1901		340	145	525
1902	43	370	148	561
1903		416	150	613
1904		438	156	643
1905		461	165	678
1906		478	162	693
1907		513	167	737
1908		516	174	748
1909	60	543	171	774
1910		556	169	794
1911		550	173	798
1912		549	174	805
1913		572	176	840
1914		584	180	865
1915		557	117	769
1916		561	160	830
1917		603	154	879
1918		615	147	892
1919	140	622	155	917
1920		640	145	932
1921		664	159	984
1922		688	157	1016
1923		705	158	1045
1924		620	160	950
1925		588	160	917
1926		594	165	936
1927		594	165	942
1928		522	161	853
1929	168	503	152	823
1930	157	493	151	801
1931	127	450	139	716
1932	114	406	121	641
1933	133	419	105	657
1934	173	458	109	740
1935	175	462	103	740
1936	190	477	102	769
1937	202	492	99	793
1938	202	441	96	739
1939	197	422	93	712
1940	206	439	91	736
1941	216	457	88	761
1942	197	462	82	741
1943	193	416	79	688
1944	213	393	78	684
1945	220	383	73	676
1946	235	396	78	709
1947	250	419	79	748
1948	269	442	76	787
1949	261	434	75	770
1950	264	416	73	753
1951	290	373	69	732
1952	307	335	66	708
1953	316	293	58	667
1954	323	227	44	594
1955	338	225	34	597
1956	353	228	32	613
1957	354	229	31	614

ML-4, SOURCES

Col. A, Petroleum and natural gas. Table ML-6, Col. H, transcribed.

Col. B, Bituminous coal. Table ML-8, Col. J, transcribed.

Col. C, Anthracite. Table ML-10, Col. G, transcribed.

Col. D, All mineral fuels. Sum of Cols. A, B, and C, adjusted by linking for the missing data in some years (with interpolation of ratios at the two ends of a decade).

ML-5. MINERAL FUELS: Employment/Output

	Employment (1000)	Output ($ mil., 1954 prices)	Preferred series, employment/output (men per $1000)		
			Output in 1902 prices	Output in 1929 prices	Output in 1954 prices
	A	B	C	D	E
1870	94	278	1.47	.639	.338
1871		283			
1872		352			
1873		389			
1874		376			
1875		369			
1876		363			
1877		411			
1878		393			
1879		406			
1880	178	546	1.359	.652	.326
1881		584			
1882		650			
1883		687			
1884		711			
1885		720			
1886		764			
1887		862			
1888		969			
1889	332	943	1.419	.702	.352
1890	343	1049	1.314	.661	.327
1891	358	1133	1.279	.642	.316
1892	369	1176	1.281	.640	.314
1893	392	1189	1.347	.670	.330
1894	407	1130	1.469	.731	.360
1895	414	1264	1.344	.667	.328
1896	425	1267	1.367	.688	.335
1897	430	1297	1.348	.686	.332
1898	435	1378	1.287	.658	.316
1899	445	1569	1.153	.593	.284
1900	485	1648	1.186	.624	.294
1901	525	1813	1.172	.608	.290
1902	561	1802	1.236	.688	.311
1903	613	2220	1.115	.588	.276
1904	643	2238	1.150	.611	.287
1905	678	2494	1.087	.581	.272
1906	693	2545	1.085	.590	.272
1907	737	3014	.974	.529	.245
1908	748	2749	1.081	.581	.272
1909	774	2962	1.033	.565	.261
1910	794	3236	.968	.532	.245
1911	798	3265	.966	.527	.244
1912	805	3427	.924	.513	.235
1913	840	3687	.897	.496	.228
1914	865	3480	.975	.537	.249
1915	769	3600	.836	.463	.214
1916	830	3927	.823	.462	.211
1917	879	4350	.788	.441	.202
1918	892	4518	.771	.433	.197
1919	917	3978	.891	.501	.231
1920	932	4643	.775	.442	.201
1921	984	4026	.938	.528	.244
1922	1016	3999	.953	.561	.254
1923	1045	5480	.721	.417	.191
1924	950	5032	.708	.409	.189
1925	917	5117	.665	.396	.179
1926	936	5583	.627	.367	.168
1927	942	5670	.614	.362	.166
1928	853	5564	.563	.333	.153
1929	823	6037	.497	.296	.136
1930	801	5394	.539	.321	.148
1931	716	4771	.542	.324	.150
1932	641	4163	.553	.331	.154
1933	657	4604	.512	.308	.143
1934	740	4812	.552	.330	.154
1935	740	5093	.519	.313	.145
1936	769	5726	.480	.291	.134
1937	793	6254	.450	.274	.127
1938	739	5573	.466	.285	.133
1939	712	5990	.419	.255	.119
1940	736	6551	.397	.243	.112
1941	761	6986	.386	.236	.109
1942	741	7313	.360	.220	.101
1943	688	7717	.315	.193	.089
1944	684	8383	.288	.176	.082
1945	676	8241	.287	.177	.082
1946	709	8159	.303	.186	.087
1947	748	8953	.292	.180	.084
1948	787	9321	.292	.181	.084
1949	770	8001	.326	.203	.096
1950	753	8821	.289	.181	.085
1951	732	9767	.251	.158	.075
1952	708	9620	.244	.154	.074
1953	667	9719	.226	.143	.069
1954	594	9327	.208	.132	.064
1955	597	10168	.193	.122	.059
1956	613	10802	.186	.118	.057
1957	614	10795	.185	.118	.057

ML-5, SOURCES

Index in 1954 Prices:

COL. A, Employment. Table ML-4, Col. D, transcribed.

COL. B, Output, 1954 prices. Table MO-2, Col. G, transcribed.

COLS. C and D, Preferred series, employment/output, 1902 and 1929 prices. Computed as Col. E, except that 1902- and 1929-weighted output series from Table MO-2 were used.

COL. E, Preferred series, employment/output, 1954 prices. Ratio, Col. A/Col. B.

ML-5, NOTES

For an alternative measure of the trend in employment/output in fuels, see Table ML-3, Col. D.

ML-6. PETROLEUM AND NATURAL GAS: Employment

ML-6, SOURCES

COL. A

1929-51. 1954 *Nat. Income* suppl., "Number of Persons Engaged in Production."

1952-57. *U.S. Income and Output*, Table VI–16.

COL. B, BLS *Emp. & Earnings* Bull., SSA Group 13; June 1956 supplement, p. 50; July 1958 supplement, p. 84.

COL. C, Barger & Schurr, Table A-3, p. 312.

COL. D, WPA-NRP Report E-10, *Petroleum and Natural Gas Production*, Table A-11.

COL. E, Carson, p. 49.

COL. F, *1954 Census of Mineral Industries*, pp. 13A-4 and 13A-5.

COL. G, *Ibid.*

COL. H, Preferred series

1870. Col. G linked to Col. H at 1880.

1880-1919. Col. D linked to Col. A at 1935 figure (ratio, 1.277).

1929-57. Col. A, transcribed.

ML-6, NOTES

[a] Figures reduced to 300-day-year basis for establishments working fewer days in 1902. 1902 was also the only year in which there was adequate coverage of contract operations (Barger & Schurr, p. 325).

1939-57 are the only good data, from Social Security data (National Income Division, Department of Commerce, adds an estimate of the small number of self-employed).

N.I.D. and Barger and Schurr disagree sharply on 1929-39 (figures in 000's):

	1929	*1935*	*1936*	*1937*	*1938*	*1939*
Commerce (total workers)	168	175	190	202	202	197
Barger and Schurr (wage earners)	179	140	155	167	163	154

(Barger and Schurr give no estimates for 1930-34.)

It does not appear that Commerce has very good estimates prior to 1939—see *Nat. Income* suppl. 1954 (pp. 67, 69-70) and pp. 14-15 of a mimeographed technical appendix (no date: 1950?) kindly lent by Marilyn J. Young. Commerce used for 1929 a regression of payrolls on value of output, and a BLS index of average earnings, based on a BLS payrolls index which they (Commerce) had rejected (mimeo, p. 15). Barger and Schurr, on the other hand, use a 1929 figure from the WPA National Research Project, based on *1930 Census* data on "Occupations" and "Unemployment," extrapolated to 1929 by BLS index of petroleum employment. (WPA-NRP Report E-10, p. 327, fn. n, and p. 316, fn. g.)

A regression of employment on output (oil, gas, and gas products, combined with 1935-39 value weights) and well drilling (*Petroleum Facts and Figures*) shows a very high correlation for the period 1939-57, where we have good data. This correlation indicates that the Commerce estimate for 1929 is a little low, and the WPA-NRP estimate for 1929 (used by Barger & Schurr) is too high.

The adjusted Census of Occupations data (Carson) for 1940 and 1930 agree fairly well with the regression—i.e., give the same indication of errors in the Commerce and NRP estimates. However, they indicate a higher employment figure than the regression (thus showing a greater rise in labor productivity in 1930-40 than do the Commerce National Income Division estimates). The similar regressions (scatter

(thousands)

	Commerce, persons engaged	BLS, all employees	Barger & Schurr, wage earners	WPA-NRP, wage earners	Carson, manpower available	Census, production & development workers	Census, persons engaged	Preferred series, persons engaged
	A	B	C	D	E	F	G	H
1870						n.a.	4.5	5.9
1880				11.5		n.a.	11.5	15
1889				18.5		26.9	29.2	24
1902			32.3	33.4		[a]22.4	[a]27.6	43
1909				46.7		37.6	60.4	60
1910					55.9			
1919				111		93.7	126	140
1920					174			
1929	168		179	179				168
1930	157				202			157
1931	127							127
1932	114							114
1933	133							133
1934	173							173
1935	175		140	137				175
1936	190		155	150				190
1937	202		167	160				202
1938	202		163					202
1939	197	189	154			149	194	197
1940	206	194			208			206
1941	216	201						216
1942	197	187						197
1943	193	180						193
1944	213	198						213
1945	220	206						220
1946	235	220						235
1947	250	237						250
1948	269	262						269
1949	261	254						261
1950	264	254						264
1951	290	272						290
1952	307	290						307
1953	316	297						316
1954	323	304				235	336	323
1955	338	317						338
1956	353	325						353
1957	354	326						354

diagrams) of employment on output and well drilling expenditures (in constant dollars) indicate the reasonableness of the employment estimates of WPA-NRP; they seem to show the Carson-Census estimates to be high for 1920 and 1930.

These considerations lead to use of the following estimates of employment:

(1) Commerce for 1929-57, though 1929-34 seems a little low.

(2) WPA-NRP for 1880-1919, linked at 1935, where both Commerce and NRP had Census of Mines data as a guide and are therefore apparently consistent with each other.

ML-7. PETROLEUM AND NATURAL GAS: Employment/Output

ML-7, SOURCES

COL. A, Output. Table MO-4, Col. C, transcribed.
COL. B, Employment. Table ML-6, Col. H, transcribed.
COL. C, Col. E converted to 1929 = 100.
COL. D, Barger & Schurr, employment (p. 312) divided by index of output (p. 348) and converted to 1929 = 100.
COL. E, Preferred series, employment/output. Ratio, Col. B/Col. A (persons per $1,000,000 of output, 1954 prices).

ML-7, NOTES

The employment/output data in oil and gas are particularly open to debate, as the comparison in Cols. C and D makes apparent. "Production" in this industry is difficult to define, both because much productive activity (prospecting and well drilling) results in no immediate physical "output" and because the weighting problem is serious. In addition, the employment data are quite dubious (cf. Table ML-6).

Barger and Schurr, p. 348, differ from us in their estimate of output, showing an 800% increase from 1902 to 1929, based on weights that change with the prices of the component outputs (gas and oils); while we show a 990% increase, based on constant price weights (Table MO-4). On employment, Barger and Schurr show (p. 312) a 450% increase, while we show a 290% increase (Table ML-6). The result is that our employment/output ratio (Col. C) shows a drop of 64% between these two years, while the Barger and Schurr figures indicate a drop of only 39%.

	Output, petroleum and gas ($ mil., 1954 prices)	Employment (1000 men)	Col. E as 1929 = 100	Barger & Schurr (1929 = 100)	Preferred series, employment/output, Col. B / Col. A (men per $ mil.)
	A	B	C	D	E
1870	14.7	5.9			401
1880	73.1	15			205
1889	123	24			195
1902	274	43	280	163	157
1909	558	60			108
1919	1124	140			125
1929	2993	168	100	100	56.1
1930	2693	157	104		58.3
1931	2537	127	89		50.0
1932	2340	114	87		48.7
1933	2676	133	89		49.7
1934	2703	173	114		64.0
1935	2967	175	105	81	59.0
1936	3279	190	103	81	57.9
1937	3801	202	95	76	53.1
1938	3613	202	100	77	55.9
1939	3768	197	93	70	52.3
1940	4032	206			51.1
1941	4184	216			51.6
1942	4169	197			47.2
1943	4536	193			42.5
1944	5043	213			42.2
1945	5166	220			42.6
1946	5233	235			44.9
1947	5618	250			44.5
1948	6128	269			43.9
1949	5660	261			46.1
1950	6114	264			43.2
1951	6994	290			41.5
1952	7167	307			42.8
1953	7391	316			42.8
1954	7310	323			44.2
1955	7847	338			43.1
1956	8293	353			42.6
1957	8354	354			42.4

ML-8. BITUMINOUS COAL: Employment

(thousands)

	Census, production & development workers	BLS, production workers	WPA-NRP & Min. Yearbook, men employed	Bu. of Mines Injury bulletins	Col. C / Col. B	BLS, all employees	Census, no. of employees	USDC, all persons engaged	Col. H / Col. F	Preferred series, men employed
	A	B	C	D	E	F	G	H	I	J
1870							41.7			36
1880			93.4				109			93.4
1889	169						175			186
1890			192							192
1891			206							206
1892			213							213
1893			230							230
1894			245							245
1895			240							240
1896			244							244
1897			248							248
1898			256							256
1899			271							271
1900			304							304
1901			340							340
1902	[a]281		370				[a]295			370
1903			416							416
1904			438							438
1905			461							461
1906			478							478
1907			513							513
1908			516							516
1909	489	512	543		1.06		510			543
1910			556							556
1911			550							550
1912			549							549
1913			572							572
1914		550	584		1.06					584
1915			557							557
1916			561							561
1917			603							603
1918			615							615
1919	546	546	622		1.14		584			622
1920			640							640
1921			664							664
1922			688							688
1923		643	705		1.10					705
1924		565	620		1.10					620
1925		537	588		1.09					588
1926		542	594		1.10					594
1927		542	594		1.10					594
1928		476	522		1.10					522
1929	459	459	503		1.10		486	476		503
1930		441	493		1.12			457		493
1931		408	450		1.10			424		450
1932		350	406		1.16			364		406
1933		366	419		1.14			379		419
1934		423	458		1.08			438		458
1935	435	436	462		1.06		454	450		462
1936		450	477		1.06			464		477
1937		461	492		1.07			478		492
1938		406	441		1.09			424		441
1939	371	372	422		1.13	388	395	389	1.00	422
1940		416	439		1.06	435		447	1.03	439
1941		413	457		1.11	431		461	1.07	457
1942		454	462		1.02	475		487	1.03	462
1943		418	416		.995	437		439	1.00	416
1944		401	393		.980	419		419	1.00	393
1945		366	383		1.05	384		392	1.02	383
1946		355	396		1.12	373		397	1.06	396
1947		402	419		1.04	426		437	1.03	419
1948		411	442	429	1.08	436		462	1.06	442
1949		368	434	409	1.18	393		408	1.04	434
1950		344	416	409	1.21	368		406	1.10	416
1951		348	373	372	1.07	372		382	1.03	373
1952		304	335	339	1.10	328		341	1.04	335
1953		268	293	295	1.09	289		296	1.02	293
1954	200	209	227	242	1.09	228	227	234	1.03	227
1955		200	225			219		227	1.05	225
1956		209	228			229				228
1957		208	229			230				229

ML-8, SOURCES

COL. A, *1954 Census of Mineral Industries*, p. 12A-4, "Production and development workers."

COL. B, BLS *Emp. & Earnings* Bull., July 1958, p. 90, "Production workers."

COL. C

1880. WPA-NRP Report E-9, *Mechanization, Employment and Output Per Man in Bituminous Coal Mining*, Vol. II, p. 358.

1890-1954. *Min. Yearbook 1954*, Vol. II, "Men employed" (WPA same as *Minerals Yearbook* for 1890 and following).

1955-57. *Min. Yearbook 1957*, Vol. II, p. 14.

COL. D, Bureau of Mines, *Injury Experience* bulletins.

COL. E, Ratio, Col. C/Col. B.

COL. F, BLS *Emp. & Earnings* Bull., July 1958, p. 84, "All employees."

COL. G, *1954 Census of Mineral Industries*, p. 12A-5, "Number of persons engaged."

COL. H, *Nat. Income* suppl. 1954 and *Survey Cur. Bus.*, July 1957, Table 28, persons engaged (full-time equivalent).

COL. I, Ratio, Col. H/Col. F.

COL. J, Preferred series

1870. Col. G linked to Col. C at 1880.

1880. Col. C, transcribed.

1889. Col. G, linked to Col. C at 1909.

1890-1957. Col. C, transcribed.

ML-8, NOTES

[a] Employment reduced to number of 300-day man-years for establishments working shorter periods. There was a strike in 1902.

Reasons for the differences between Cols. B and C (reflected in the ratios in Col. E) are:

(1) Sampling error in the BLS series; undetected reporting errors by respondents for either or both series.

(2) Different coverage: Both series cover production workers, but the BLS series covers working foremen, timekeepers, power plant workers, and others "closely associated" with production operations (p. 8E of monthly "explanatory notes" in BLS *Emp. & Earnings* Bull.) The Bureau of Mines survey, however, requests on its questionnaire (Budget Bureau No. 42-RO26.9, Oct., 1950) that "supervisory and technical personnel *at the operation*" be included; and working proprietors, in addition, are counted; the Bureau of Mines makes particular effort to see that every mining establishment is covered so far as possible, regardless of association with other establishments, such as steel mills, railroads, etc., (though small mines producing less than 1,000 tons per year are omitted, and those producing less than 10,000 are believed to be inadequately covered).

(3) The Bureau of Mines series is essentially an "active period average"—the questionnaire asks for "Average number of men working on active days." The BLS counts those working any part of a pay period; those affiliated with a mine shut down for an entire pay period are not counted by BLS, but are counted by the Bureau of Mines. This probably accounts for the tendency of the BLS series to fall relative to the Bureau of Mines series in years of recession, like 1932 and 1949, and to rise relatively in years of full employment, like 1942-45 and 1951. In addition, the BLS counts those on paid vacations or sick leave, etc., while Mines counts only those on the job; this may account for the Mines figure being lower than the BLS in 1943-44.

The reasons for the differences in the two Bureau of Mines figures have not been explored. The data were gathered in separate surveys which were discontinued in 1955.

The concept of the Commerce National Income Division series on all persons engaged (including proprietors) is more inclusive than an "all employees" concept, but the figures are reduced to a "full-time equivalent" basis (*Nat. Income* suppl. 1954, Table 28, footnote 1); this may account in part for the fluctuating relationship of the series to the BLS "all employees" series, which, as noted above, may or may not reflect partial unemployment, depending on whether a shut-down covers an entire pay period or only part of it.

ML-9. BITUMINOUS COAL: Employment/Output

	Output (mil. tons)	Employment (1000)	Preferred series, employment/output (men per 1000 tons)
	A	B	C
1870	20.5	36	1.8
1880	50.8	93.4	1.84
1889	95.7	186	1.94
1890	111	192	1.73
1891	118	206	1.75
1892	127	213	1.68
1893	128	230	1.79
1894	119	245	2.06
1895	135	240	1.78
1896	138	244	1.77
1897	148	248	1.68
1898	167	256	1.54
1899	193	271	1.40
1900	212	304	1.43
1901	226	340	1.51
1902	260	370	1.42
1903	283	416	1.47
1904	279	438	1.57
1905	315	461	1.46
1906	343	478	1.39
1907	395	513	1.30
1908	333	516	1.55
1909	380	543	1.44
1910	417	556	1.33
1911	406	550	1.36
1912	450	549	1.22
1913	478	572	1.20
1914	423	584	1.38
1915	443	557	1.26
1916	503	561	1.12
1917	552	603	1.09
1918	579	615	1.06
1919	466	622	1.33
1920	569	640	1.13
1921	416	664	1.60
1922	422	688	1.63
1923	565	705	1.25
1924	484	620	1.28
1925	520	588	1.13
1926	573	594	1.04
1927	518	594	1.15
1928	501	522	1.04
1929	535	503	.94
1930	467	493	1.05
1931	382	450	1.18
1932	310	406	1.31
1933	334	419	1.26
1934	359	458	1.27
1935	372	462	1.24
1936	439	477	1.09
1937	446	492	1.10
1938	349	441	1.27
1939	395	422	1.07
1940	461	439	.953
1941	514	457	.889
1942	583	462	.793
1943	590	416	.705
1944	620	393	.634
1945	578	383	.663
1946	534	396	.742
1947	631	419	.664
1948	600	442	.737
1949	438	434	.991
1950	516	416	.806
1951	534	373	.699
1952	467	335	.718
1953	457	293	.641
1954	392	227	.579
1955	465	225	.484
1956	501	228	.455
1957	493	229	.465

ML-9, SOURCES

COL. A, Output. Table MO-5, Col. B.
COL. B, Employment. Table ML-8, Col. J, transcribed.
COL. C, Preferred series. Ratio, Col. B/Col. A.

ML-10. ANTHRACITE: Employment

(thousands)

	Bu. of mines, employees	WPA-NRP, wage earners	BLS, production & related workers	Census, wage earners or prod. & devel. workers	Census, all workers	Commerce, persons engaged	Preferred series, production workers
	A	B	C	D	E	F	G
1870					53		52
1880				70	71		70
1889				122	124		122
1890	126						126
1891	126						126
1892	129						129
1893	133						133
1894	132						132
1895	143						143
1896	149						149
1897	150						150
1898	146						146
1899	140						140
1900	144						144
1901	145						145
1902	148			[a]70	[a]73		148
1903	150						150
1904	156						156
1905	165						165
1906	162						162
1907	167						167
1908	174						174
1909	171			169	174		171
1910	169						169
1911	173						173
1912	174						174
1913	176						176
1914	180						180
1915	177						177
1916	160						160
1917	154						154
1918	147						147
1919	155	148		147			155
1920	145	144					145
1921	159	162					159
1922	157	90					157
1923	158	164					158
1924	160	173					160
1925	160	117					160
1926	165	165					165
1927	165	154					165
1928	161	147					161
1929	152	146		143		151	152
1930	151	137				144	151
1931	139	112				128	139
1932	121	89				105	121
1933	105	87				94	105
1934	109	105				108	109
1935	103	92		92		101	103
1936	102	93				100	102
1937	99	89				100	99
1938	96	78				91	96
1939	93		84	83		90	93
1940	91		86			93	91
1941	88		87			94	88
1942	82		84			91	82
1943	79		78			85	79
1944	78		76			81	78
1945	73		68			74	73
1946	78		77			83	78
1947	79		75			82	79
1948	76		76			84	76
1949	75		73			79	75
1950	73		71			78	73
1951	69		65			73	69
1952	66		60			66	66
1953	58		50			56	58
1954	44		36	33		42	44
1955	34		28			33	34
1956	32		27				32
1957	31		26				31

ML-10, SOURCES

COL. A, *Min. Yearbook 1959*, Vol. II, p. 12, Table 11, anthracite, mines data.

COL. B, WPA-NRP Report S-2, p. 117, "Wage earners."

COL. C, BLS *Emp. & Earnings* Bulls., "Production and related workers."

COL. D, *1954 Census of Mineral Industries*, p. 11B-4, "Production and development workers."

COL. E, *Ibid.*, "Persons engaged, total."

COL. F

1929-51. 1954 *Nat. Income* suppl., Table 28.

1952-55. *Survey Cur. Bus.*, July 1956, "Persons engaged."

COL. G, Preferred series

1870. Col. E linked to Col. G at 1880.

1880-89. Col. D, transcribed.

1890-1957. Col. A, transcribed.

ML-10, NOTES

[a] Full year average; includes period of 5 month strike (*1939 Census of Mineral Industries*, Vol. I, p. 302).

The Bureau of Mines data, though labeled "average number of employees," presumably relate only to workers subject to accident hazards of mining. The recent tables and text in the *Minerals Yearbooks* do not say this, but this is the basis of most of their data, which is collected by voluntary mail questionnaires—with, however, considerable checking by the Bureau (cf. *Min. Yearbook 1953*, Vol. II, p. 171); and Barger and Schurr, who use this series for their employment data for 1899-1939, so describe it (pp. 272-73, 312, 324). These data are "active period averages," which do not use zero-employment (shutdown) periods in computing their annual averages.

The Census data are full year averages, including shutdown periods. This accounts in part for Census running lower than Bureau of Mines and explains the marked difference between the two series in 1902.

The WPA-NRP data are "full-time equivalent" employments for most years, as they are based on Census reports, interpolated by man-shift estimates from Bureau of Mines data.

The Commerce data cover all workers, employed and self-employed; they are based largely on the BLS production-worker series. The reasons for the considerable fluctuations in the relationship between these series and the Bureau of Mines series are presumably due to variations in amount of part-time employment.

ML-11. ANTHRACITE: Employment/Output

	Output (mil. tons)	Employment, production workers (1000)	Preferred series, employment/output (workers per 1000 tons)
	A	B	C
1870	20.0	52	2.6
1880	28.6	70	2.44
1889	45.5	122	2.68
1890	46.5	126	2.71
1891	50.7	126	2.49
1892	52.5	129	2.46
1893	54.0	133	2.46
1894	51.9	132	2.54
1895	58.0	143	2.47
1896	54.3	149	2.74
1897	52.6	150	2.85
1898	53.4	146	2.74
1899	60.4	140	2.32
1900	57.4	144	2.51
1901	67.5	145	2.15
1902	41.4	148	[a]3.58
1903	74.6	150	2.01
1904	73.2	156	2.13
1905	77.7	165	2.12
1906	71.3	162	2.27
1907	85.6	167	1.95
1908	83.3	174	2.09
1909	81.1	174	2.15
1910	84.5	170	2.01
1911	90.5	173	1.91
1912	84.4	174	2.06
1913	91.5	176	1.92
1914	90.8	180	1.98
1915	89.0	177	1.99
1916	87.6	160	1.83
1917	99.6	154	1.55
1918	98.8	147	1.49
1919	88.1	155	1.76
1920	89.6	145	1.62
1921	90.5	160	1.77
1922	54.7	157	2.87
1923	93.3	158	1.69
1924	87.9	160	1.82
1925	61.8	160	2.59
1926	84.4	165	1.95
1927	80.1	165	2.06
1928	75.3	161	2.14
1929	73.8	152	2.06
1930	69.4	151	2.18
1931	59.6	139	2.33
1932	49.9	121	2.43
1933	49.5	105	2.12
1934	57.2	109	1.91
1935	52.2	103	1.97
1936	54.6	102	1.87
1937	51.9	99	1.91
1938	46.1	96	2.08
1939	51.5	93	1.81
1940	51.5	91	1.77
1941	54.5	88	1.62
1942	57.7	82	1.42
1943	59.4	79	1.33
1944	63.2	78	1.23
1945	54.7	73	1.34
1946	60.2	78	1.30
1947	56.6	79	1.40
1948	56.6	76	1.34
1949	42.3	75	1.77
1950	43.5	73	1.68
1951	42.7	69	1.62
1952	40.6	66	1.63
1953	30.9	58	1.87
1954	29.1	44	1.51
1955	26.2	34	1.30
1956	28.9	32	1.11
1957	25.3	31	1.22

ML-11, SOURCES

COL. A, Output. Table MO-6, Col. B, less "independent" output included in Col. B for 1941-50 (see note, Table MO-6).

COL. B, Employment. Table ML-10, Col. G, transcribed.

COL. C, Preferred series. Ratio, Col. B/Col. A.

ML-11, NOTES

[a] This high figure is due to a 5 month strike in 1902, which reduced output but not "active-period employment."

Our Table MO-6 output series in the period 1941-50 included ½% to 5% "bootleg" or "independent"-produced coal, for which no corresponding employment was included in our data. We have deducted this "bootleg" coal from the Table MO-6 totals to arrive at an output series comparable with our employment series.

The employment series used here (from Table ML-10) is an "active-period average" which does not allow for part-time employment. In one sense it therefore understates the fall in employment/output in recent years.

It is worth noting that these employment/output figures cover coal produced under a great variety of conditions: hand loading, machine loading, strip mines, and river dredging and culm (waste) bank processing to recover coal formerly discarded. The published productivity figures for 1954 run from 2½ to 17 tons per man-day (see *Min. Yearbook 1954*, "Coal—Anthracite," Table 28).

ML-12. METAL MINING: Employment

(thousands)

	Commerce, persons engaged	Carson, manpower available	Census of Min. Ind.		BLS		Barger & Schurr wage earners	Bu. of Mines, employment at mines & ore dressing plants	Preferred series, all persons engaged	Preferred series, production workers
			All persons engaged	Production workers	All employees	Production workers				
	A	B	C	D	E	F	G	H	I	J
1870			39.9	[a]39.9						40
1880			65.9	62.6						63
1889			108	[a]108						103
1902			[b]134	[b]123						129
1909			180	161						154
1910		192							192	
1913							183.3	194		
1914							152.7	164		
1915							152.2	164		
1916							209.3	222		
1917							208.0	219		
1918							189.2	198		
1919			148	136			147.7	154		140
1920		157					138.9	144	157	134
1921							89.0	94.9		84
1922							104.7	110		102
1923							125.4	131		121
1924							126.0	132		122
1925							129.3	136		122
1926							129.9	136		124
1927							121.0	127		114
1928							112.1	117		109
1929	130		119	110			120.1	126	130	116
1930	113	114					102.7	108	113	96
1931	86						78.2	83.2	86	74
1932	59						48.8	54.4	59	45
1933	60						51.6		60	46
1934	72						61.7	68.4	72	56
1935	84						84.1		84	84
1936	105						95.0	107	105	93
1937	132						115.2	128	132	114
1938	108						96.1	109	108	101
1939	116		100.1	89.8	102.6	92.6	102.6	119	116	113
1940	131	138			115.2	103.9		130	131	124
1941	144				128.3	115.7		135	144	131
1942	141				132.3	119.4		119	141	121
1943	138				125.7	112.7		107	138	107
1944	111				105.7	95.3		88.5	111	90
1945	93				89.3	78.6		77.1	93	76
1946	93				87.8	78.1		80.8	93	78
1947	104				103.0	93.1		[c]87.2	104	89
1948	106				104.2	93.8		[c]87.1	106	89
1949	99				97.7	86.8		88.4	99	83
1950	101				96.9	85.9		[c]83.2	101	83
1951	106				101.0	89.1		87.9	106	86
1952	107				99.8	86.6		92.2	107	84
1953	111				106.0	91.6		92.3	111	91
1954	105		97.9	81.9	99.3	85.0		85.7	105	83
1955	109				101.4	86.6			109	82
1956	115				108.8	92.9			115	87
1957	115				111.2	94.4			115	93

ML-12, SOURCES

COL. A

1929-45. 1954 *Nat. Income* suppl., Table 28, line 6, number of persons engaged in production.

1946-57. *U.S. Income and Output,* Table VI-16, line 6.

COL. B, Daniel Carson, "Manpower available for extraction of minerals," in *Studies in Income and Wealth,* Vol. XI (National Bureau of Economic Research, New York, 1949), p. 49, total of 4 lines: Copper, Gold and silver, Iron, and Lead and zinc mining.

COL. C, *1954 Census of Mineral Industries,* p. 10A-5; 1929 from *1939 Census,* Vol. I, pp. 24-25.

COL. D, *Ibid.,* "Production and development workers" or "wage earners."

COL. E

1939-49. BLS *Employment, Hours, and Earnings* bulletins, summary sheets.

1950-55. BLS *Emp. & Earnings* Bull., June 1956, p. 50, Table SA-2, all employees.

1956-57. BLS *Emp. & Earnings* Bull., July 1958, p. 84.

COL. F, BLS *Emp. & Earnings* Bull., June 1956, Table SA-3, p. 56, "Production workers"; July 1958, p. 90.

COL. G, Barger & Schurr, p. 310, "Men: metal mining and ore dressing" (excludes placer gold mining—Barger & Schurr, p. 315).

COL. H, Worksheet 2 of this table, Col. D (from *Minerals Yearbooks,* sections on accidents and employment; and various Bureau of Mines technical papers on mining accidents).

COL. I, Preferred series, all workers

1910, 1920. Col. B, transcribed.

1929-57. Col. A, transcribed.

COL. J, Preferred series, production workers, mines and mills. Worksheet 1, below: The sum of our estimates for the separate sub-industries.

ML-12, NOTES

[a] All employees.

[b] Employment reduced to a 300-day basis for establishments which operated for a shorter period.

[c] Taken from *Minerals Yearbooks;* difference due to rounding.

Because of the different sources of data and definitions of employment, no significance should be attached to figures derived by subtracting Col. J from Col. I.

Extensive discussion and reconciliation of the figures in the different columns of this table are offered in the four worksheets which follow. A summary of general differences between the series is offered here:

The coverage of establishments working in conjunction with mines is one of the most troublesome points. The ore milling or concentrating plants are generally covered by the Census, though in some earlier years it included smelting plants (now generally considered as manufacturers). The Bureau of Mines gives separate data for mills and for smelters in most years, and in addition gives figures for "auxiliaries" (maintenance shops, construction works, etc.) separately in some years (see Worksheet 3, below). The difference in coverage as between Mines, Census, and BLS is nowhere clearly defined.

COL. A. The Commerce series covers all workers (including proprietors), on a full-time-equivalent basis. In years of part-time employment or strikes, it falls relative to some of the other series. Based on Census, with BLS as interpolator.

COL. B. Census of Occupations data, used by Carson, generally overstate the number actually working in mines, because responding individuals do not make allowances for part-time work, extended unemployment, partial or even complete retirement.

COL. C. Census of Mines data are not entirely consistent from one decade to another, owing to varying methods of requesting information, tabulating, etc.; e.g., the 1909 figure has been completely revised in the *1954 Census* report in an attempt at consistency (cf. Col. J). In general, the number of workers is the average of the number on the payroll at specified dates in the 12 months of the year. The earlier data, however, are for a "representative day" during the year, which apparently was a very elastic concept. (cf. *1910 Census,* Vol. XI, p. 322, where the number of wage earners on December 15 or a "representative day" in precious metals mining is given as 54,011; while the *maximum* number in any one month is given as 45,246.)

COL. D. "Production and development workers" is taken as equivalent to "wage earners" in the earlier censuses. On coverage, see general notes above.

COLS. E and F. The Bureau of Labor Statistics data are obtained by sampling (monthly) and have small deviations owing to sampling error. The data shown are for average employment for the year and therefore drop relative to some other series when there is part-time employment, such as during a strike, which closes the mines during one or more pay periods.

COL. G. Barger and Schurr's data are based on Bureau of Mines data with adjustments to exclude Alaska (3,000 to 6,000 men) and to include ore dressing mills and "auxiliaries" on a consistent basis. They also exclude gold placer operations (1,000 to 15,000 men) and include (following Mines) fluorspar mines in the principal area, Illinois and Kentucky (300 to 1,500 men).

COL. H. The series given here is the sum of employment at mines, mills, and auxiliary works, as reported by the Bureau of Mines. Some estimation on our part has been required, as indicated in Worksheet 2. The figures include 3,000-6,000 men in Alaskan operations; 300-1,500 men in fluorspar operations in Illinois and Kentucky; and 100 or so men in pyrites operations (see Worksheet 4 for numbers involved in 1939).

Bureau of Mines data, unlike Census and BLS, are the averages for active periods (when the mine was open and operating) only; the number thus tends to be higher, particularly in times when a number of (or all) mines are closed for one or more pay periods.

ML-12, WORKSHEET 1. METAL MINING: Employment

ML-12, Worksheet 1, SOURCES

COL. A, Iron. Table ML-14, Col. F, transcribed.
COL. B, Copper. Table ML-18, Col. I, transcribed.
COL. C, Lead and zinc. Table ML-20, Col. F, transcribed.
COL. D, Gold and silver. Table ML-24, Col. J, transcribed (see ML-24 notes).
COL. E, Miscellaneous metals
1870-1909. Rough guesses, with the aid of data from *1954 Census of Mineral Industries,* sections 10H, 10I, and 10K, "Bauxite," "Ferroalloys," and "Miscellaneous metal ores."
1919-42. *1954 Census* data for 1919 and 1929; 1939 is from Worksheet 4 of this table, without the pyrites adjustment; rough interpolations for intervening years, based on movement of total for the major metals.
1943-54. *Minerals Yearbooks,* sections on employment and injuries: employment in mines, mills, and auxiliary works for miscellaneous metals.
1955-57. *Ibid.:* employment in mines plus ore-dressing plants, miscellaneous metals.
COL. F, Sum of Cols. A through E.

ML-12, Worksheet 1, NOTES

( ) Rough interpolation.
[a] Census figure; not used in preferred series for iron.

It is necessary to consult the various source tables to get a picture of the many qualifications which must be attached to these figures. In general, the data get much poorer as we go back in time. In addition, the methods of tabulation have changed; important instances are:

1870: data are for "all employees" or "all persons engaged." Some smelting operations are also included.

1880: average employment is for active periods only; some smelting operations are included.

1902: employment is reduced to a 300-day basis—a worker in an operation open 200 days counted as 2/3 of a worker, etc.

(thousands)

	Iron (ML-14)	Copper (ML-18)	Lead & zinc (ML-20)	Gold & silver (ML-24)	Miscellaneous	Total
	A	B	C	D	E	F
1870	15.0	5.40	1.71	17	(1)	40
1880	30.4	6.04	7.06	19	(1)	63
1889	36.3	8.52	3.12	53	(2)	103
1902	44.8	26.3	7.95	48	(2)	129
1909	[a]47.7	45.5	17.0	42	(2)	154
1919	51.8	44.7	21.9	19.0	3.1	140
1920	50.6	41.4	23.1	15.6	(3.0)	134
1921	32.3	20.9	12.2	17.2	(1.9)	84
1922	35.8	30.6	18.4	15.1	(2.3)	102
1923	41.3	38.0	22.0	16.6	(2.7)	121
1924	38.8	39.2	25.4	15.9	(2.7)	122
1925	35.8	39.8	27.8	16.3	(2.7)	122
1926	34.4	40.5	31.0	15.4	(2.8)	124
1927	34.8	37.3	26.8	12.9	(2.5)	114
1928	30.2	37.5	25.0	13.6	(2.4)	109
1929	30.8	44.6	25.9	12.0	2.6	116
1930	31.0	33.8	17.3	12.3	(2)	96
1931	22.9	24.8	11.1	12.9	(2)	74
1932	12.6	12.7	7.1	11.8	(1)	45
1933	15.1	9.0	7.3	14.0	(1)	46
1934	16.5	10.3	9.0	18.7	(2)	56
1935	15.0	13.1	10.6	41.9	(3)	84
1936	20.3	17.7	12.6	38.8	(4)	93
1937	25.9	27.0	13.7	42.8	(5)	114
1938	19.8	21.6	14.7	40.8	(4)	101
1939	21.9	23.2	15.8	46.8	5.1	113
1940	24.7	27.3	18.0	46.8	(7.1)	124
1941	29.4	30.4	18.8	43.9	(9.1)	131
1942	35.0	31.6	19.8	23.9	(11.0)	121
1943	36.6	30.9	22.2	5.25	11.8	107
1944	32.8	25.4	20.1	4.00	7.5	90
1945	27.5	20.2	17.6	5.64	4.7	76
1946	26.9	19.0	18.8	8.61	4.3	78
1947	32.8	22.8	20.0	9.46	4.3	89
1948	34.9	22.8	18.4	9.05	4.0	89
1949	31.6	21.4	17.2	8.83	4.1	83
1950	33.1	21.2	16.2	8.57	4.1	83
1951	35.1	21.0	17.3	6.91	5.7	86
1952	30.4	21.3	17.9	6.08	8.3	84
1953	36.7	22.7	14.6	5.80	10.9	91
1954	31.7	22.1	13.6	5.06	10.8	83
1955	30.8	22.6	13.9	4.20	10.6	82
1956	31.6	26.3	12.7	4.17	12.2	87
1957	35.2	25.3	13.7	4.96	13.9	93

ML-12, WORKSHEET 2. MEN EMPLOYED IN METAL MINING INDUSTRY (Bureau of Mines Data)

(thousands)

	Men employed in mines	Men employed in ore dressing mills	Men employed in plants aux. to mills	Total men, Bu. of Mines (A+B+C)	Total men (prod. & development workers), Census & BLS	Difference (D minus E)
	A	B	C	D	E	F
1913	179.5	15.0		194.5		
1914	148.9	15.1		164.0		
1915	144.9	18.6		163.5		
1916	195.4	22.4	(4.1)	221.9		
1917	190.6	24.1	(4.5)	219.2		
1918	170.8	21.8	(5.2)	197.8		
1919	132.1	17.3	(4.4)	153.8	131.2	23
1920	122.8	16.8	(4.7)	144.3		
1921	82.3	10.0	(2.6)	94.9		
1922	94.6	11.7	(3.7)	110.0		
1923	111.6	14.9	(4.8)	131.3		
1924	111.6	15.7	(4.5)	131.8		
1925	113.7	16.9	(4.9)	135.5		
1926	114.3	16.7	(4.8)	135.8		
1927	107.0	15.3	(4.5)	126.8		
1928	101.7	11.8	(3.9)	117.4		
1929	107.4	13.7	(4.4)	125.5	110.1	15
1930	92.7	11.6	(3.5)	107.8		
1931	72.0	8.9	(2.3)	83.2		
1932	46.6	5.9	(1.9)	54.4		
1933	49.3	n.a.	n.a.	n.a.		
1934	58.4	7.7	2.3	68.4		
1935	84.0	n.a.	n.a.	n.a.		
1936	90.6	13.0	(3.6)	107.2		
1937	108.4	14.5	(4.7)	127.6		
1938	93.5	11.7	(4.2)	109.4		
1939	102.3	12.5	(4.6)	119.4	92.6	27
1940	110.3	14.0	(5.2)	129.5	103.9	26
1941	114.2	14.8	(6.0)	135.0	115.7	19
1942	99.8	13.7	5.7	119.2	119.4	-0.2
1943	87.9	13.3	6.0	107.2	112.7	-5.5
1944	70.4	11.6	6.5	88.5	95.3	-6.8
1945	61.3	15.8		77.1	78.6	-1.5
1946	65.2	15.6		80.8	78.1	2.7
1947	71.2	15.9		87.1	93.1	-6.0
1948	71.4	15.6		87.0	93.8	-6.8
1949	71.7	16.7		88.4	86.8	1.6
1950	68.3	15.0		83.3	85.9	-2.6
1951	71.6	16.3		87.9	89.1	-1.2
1952	74.6	17.6		92.2	86.6	5.6
1953	72.5	19.8		92.3	91.6	0.7
1954	66.6	19.1		85.7	85.0	0.7
1955	65.1	17.6		82.7	86.6	-3.9
1956	68.3	19.3		87.6	92.9	-5.3
1957	68.5	21.6		90.1	94.4	-4.3

ML-12, WORKSHEET 3. DISTRIBUTION OF METALLURGICAL PLANTS EMPLOYMENT (Bureau of Mines Data)

	Ore dressing		Smelting		Total auxiliaries (1000)	Percentage	
	Mills (1000)	Auxiliaries (1000)	Smelters (1000)	Auxiliaries (1000)		Mill aux. to total aux.	Mill to mill plus smelter employment
	A	B	C	D	E	F	G
1913		15.0		20.6			42
1914		15.1		27.9			35
1915		18.6		31.3			37
1916	22.4	(4.1)	43.8		14.0	(29)	34
1917	24.1	(4.5)	44.4		15.6	(29)	35
1918	21.8	(5.2)	39.9		18.0	(29)	35
1919	17.3	(4.4)	28.8	(10.7)	15.1	(29)	38
1920	16.8	(4.7)	26.1		16.3	(29)	39
1921	10.0	(2.6)	14.6		8.8	(29)	41
1922	11.7	(3.7)	19.5		12.8	(29)	38
1923	14.9	(4.8)	22.4		16.5	(29)	40
1924	15.7	(4.5)	24.9		15.5	(29)	39
1925	16.9	(4.9)	25.1		16.8	(29)	40
1926	16.7	(4.8)	24.4		16.6	(29)	41
1927	15.3	(4.5)	22.7		15.5	(29)	40
1928	11.8	(3.9)	20.4		13.5	(29)	37
1929	13.7	(4.4)	18.6	(10.7)	15.1	(29)	42
1930	11.6	(3.5)	17.2	(8.5)	12.0	(29)	40
1931	8.9	(2.3)	12.0		8.1	(29)	
1932	5.9	(1.9)	8.9		6.7	(29)	
1933							
1934	7.7	(2.3)	11.4	(5.6)	7.9	(29)	40
1935						29	
1936	13.0	(3.6)	16.2	(8.4)	12.0	30	45
1937	14.5	(4.7)	18.0	(10.4)	15.1	31	45
1938	11.7	(4.2)	14.6	(8.6)	12.8	33	44
1939	12.5	(4.6)	15.9	(8.6)	13.2	35	44
1940	14.0	(5.2)	20.1	(9.8)	15.0	(35)	41
1941	14.8	(6.0)	22.0	(11.5)	17.5	(34)	40
1942	13.7	5.7	20.6	11.2	16.9	34	40
1943	13.3	6.0	29.5	15.9	21.9	27	31
1944	11.6	6.5	26.1	13.9	20.4	32	31
1945		15.8		30.7			34

ML-12, Worksheet 2, SOURCES

COL. A
- 1913-30. Bureau of Mines, *Metal-Mine Accidents in the U.S.*
- 1931-57. *Minerals Yearbooks,* employment and injuries sections.

COL. B, *Ibid.*

COL. C, Worksheet 3 of this table, Col. B.

COL. D, Cols. A plus B plus C.

COL. E
- 1919, 1929. *1939 Census,* Vol. I, pp. 24-25.
- 1939-57. BLS *Emp. & Earnings* Bulls.

COL. F, Cols. D minus E.

ML-12, Worksheet 2, NOTES

( ) Rough estimate. See Table ML-12, Worksheet 3.

The large differences shown in Col. F for 1939-41 are apparently due to much more complete coverage of gold and silver mines by the Bureau of Mines than by the Census of Mines, which is the benchmark for the BLS figure. See Worksheet 4.

ML-12, Worksheet 3, SOURCES

COL. A
- 1913-32. Bureau of Mines, *Accidents at Metallurgical Works in the U.S. 1932* (Washington, D.C., 1934), p. 12.
- 1934. *Min. Yearbook 1936,* p. 1079.
- 1936-45. *Minerals Yearbooks,* accidents sections.

COL. B
- 1916-41. Estimated by applying percentage in Col. F to Col. E.
- 1942-45. *Minerals Yearbooks,* accidents sections.

COL. C, Same as Col. A.

COL. D, Same as Col. B (except percentage figure used is complement, or 71% instead of 29%).

COL. E, Same as Col. A.

COL. F
- 1916-34. Extrapolation of 1935 figure.
- 1935-39. Barger & Schurr, p. 316-17, ratios of man-days, based on a tabulation by the Bureau of Mines of data from those companies reporting mill and smelter auxiliaries separately.
- 1940-41. Straight line interpolation between figures for 1939 and 1942.
- 1942-44. Calculated from data in *Minerals Yearbooks.*

COL. G, Col. A divided by Cols. A plus C. The percentages for 1913-15 and 1945 were calculated from Cols. (A plus B) and (C plus D). Since these figures include auxiliaries, the approximate stability of the percentage at the point of change (1915 to 1916) indicates our extrapolation of 29% in Col. F may be approximately correct.

ML 12, Worksheet 3, NOTES

( ) Rough estimate or interpolation.

ML-12, WORKSHEET 4. METAL MINING: Employment and Man-Hours, 1939 (Census vs. Bureau of Mines)

Introduction

The large discrepancies between the *Census of Mineral Industries* and the Bureau of Mines figures for 1939 have occasioned this extensive check of definitions and methods.

The raw summary data from the two sources show:

	Bureau of Mines	*Census*
Wage earners	..	[1] 88,394
Men employed	[2] 102,279	..
Man-hours (1,000)	[2] 189,554	[1] 188,060
Output:		
Lead content of mine output (short tons)	[3] 413,979	[4] 400,005
Zinc content of mine output (short tons)	[5] 583,807	[4] 565,774
Copper content of mine output (short tons)	[6] 728,320	[4] 717,241
Gold (1,000 fine ounces)	[7] 5,672	[4] 3,868
Less: Alaska	[8] 677	..
Philippine Islands	[8] 999	..
Equals: Output of U.S.	3,996	3,868
Silver (1,000 fine ounces)	[7] 65,565	[4] 62,737
Less: Alaska	[8] 201	..
Philippine Islands	[8] 1,192	..
Equals: Output of U.S.	64,172	62,737
Iron ore (merchantable grade, long tons)	[9] 51,732	[10] 51,645

Examination of the Bureau of Mines annotations to the employment data indicates that their data are for workers in mines only, while the Census counts all workers in "establishments," including ore dressing plants or mills run as part of mine operations (or run separately). The discrepancies shown above are thus less than the real discrepancies; the numerous adjustments are shown in this worksheet, below.

The worksheet indicates only moderate discrepancies, such as might arise in any two surveys of the "same" variables, for employment and man-hours in lead and zinc (Mississippi Valley states), in copper, in iron, and in miscellaneous nonferrous metals. In gold and silver, however, the difference in the employment counts for mines is 47% of the larger figure; and in man-hours it is over 27% of the larger figure (Bureau of Mines).

What is the probable source of the large difference in the gold and silver figures? At this date the answer can only be speculative, but it appears to be in the Census omission of very small establishments—those with gross output of less than $2,500 (*1939 Census of Mineral Industries*, Vol. I, p. 2).

Some of the evidence is:

(1) Discrepancies in number of mines reported:

	Bur. Mines	*Census*	*B.M./ Census*
Lead and zinc, Miss. Valley (incl. fluorspar for Bureau of Mines)	204	145	1.41
Copper	93	51	1.82
Iron	219	177	1.24
Gold and silver lode and "other" lead and zinc (incl. Alaska for Bureau of Mines)	4,174	1,105	3.78
Gold placer (incl. Alaska for Bureau of Mines)	3,394	339	10.01

The difference in method of counting mines obviously gives Mines a larger figure in all cases, but the differences are much larger for gold and silver, largest by far for the placer operations.

(2) If we examine the assumption that the differences in numbers of mines and numbers of workers reported by the two sources represent small mines omitted from Census, we have the following:

Lode gold, silver, etc.:

Number of mines: B.M. minus Census = 3,069 (see above)

Number of workers: B.M. (38,439) minus Census[11] (27,432) = 11,007

Average workers per mine: 11,007/3,069 = 3.6

Placer gold:

Number of mines: B.M. minus Census = 3,055 (see above)

Number of workers: B.M. (14,775) minus Census (3,228) = 11,547

Average workers per mine: 11,547/3,055 = 3.8

It seems clear that the additional mines reported by the Bureau of Mines were small. However, the average of 3.6 or 3.8 workers is large enough to have been covered by the Census; and full coverage of all the small gold panners should have given a smaller average. One man gold panning or placer operations were fairly extensive during the depression of the 1930's.

(3) A WPA National Research Project study found that the number of gold panners increased from practically zero in 1929 to about 28,000 in 1935 and perhaps 19,000 in 1937.[12] When we allow for the fact that the average placer worker reported being occupied only about 45 days in the year 1935, however, we find that full-time-equivalent employment is only about 25% of these figures—say 7,000 in 1935 and 5,000 in 1937. The 1939 figure may well have been about the same as that for 1937, as the level of national employment, prices, and incomes was similar. In addition to these placer operations, of course, there were numerous very small lode operations in the 1930's.

(4) The average man-hours per worker reported by the two sources is evidence of the casual or part-time nature of the operations covered by the Bureau of Mines. Census average number of hours for lode mines and mills is 2,360;[13] for

[1] *1939 Census of Mineral Industries*, Vol. I, p. 54.

[2] Bureau of Mines, *Metal and Nonmetal-Mine Accidents in the United States, 1939*, p. 5.

[3] *Min. Yearbook Review of 1940*, p. 118.

[4] *1939 Census*, Vol. I, p. 338.

[5] *Min. Yearbook Review of 1940*, p. 140.

[6] *Ibid.*, p. 86.

[7] "Produced in the United States . . . according to mine returns, in terms of recovered metals," *ibid.*, p. 69.

[8] *Ibid.*, p. 74.

[9] *Ibid.*, p. 524.

[10] *1939 Census*, Vol. I, p. 321.

[11] Census data for employment: lode gold (mills subtracted by estimate based on man-shifts) plus silver mines plus lead and zinc outside Mississippi Valley:

14,400 plus 4,244 plus 8,788 = 27,432

[12] Robinson, Newcomb, Merrill, and Kiessling, *Employment & Income from Gold Placering by Hand Methods, 1935-37*, WPA-NRP Report E-14 (June 1940), pp. 5, 109.

[13] Wage earners in mines and mills are not given separately by Census for gold in 1939; moreover, the number of wage earners used in computing the average is the monthly average number of workers, not the number on active days. The bias this introduces is not certain. Cf. notes c and j to this worksheet.

placer operations it is 2,500. The Bureau of Mines reports 1,900 hours for lode mines and only 1,330 hours for placer operations. These figures are of course reflected in the smaller discrepancy in hours than in employment, in the Worksheet; the point here is that the operations Census appears to have omitted were small and part-time.

(5) Checking the figures on output, above, we find the Bureau of Mines figure 128,000 ounces above that reported by establishments covered by the Census; at $35.00 an ounce, this would yield gross income of $4,500,000. (Allowing for some small expenses, net income would of course be somewhat smaller.) The WPA-NRP study showed an average of $1.60 gross income per man-day,[14] which would come to about $300 per man-year of 200 days. From this we might calculate that there were 15,000 full-time-equivalent men in casual, small-scale gold mining in 1939, which compares with the 19,008 difference in employment in our table, or the 18,847,000 difference in hours (which is less than 12,000 man-years of 200 days of 8 hours each).

(6) Finally, we may note the fact that discrepancies between Mines and Census are small in 1929 and 1954, lending further support to the theory that the 1939 discrepancy is due to omission by Census of the small gold establishments that sprang up in the 1930's.

In view of the complexity of the differences, and the numerous areas of uncertainty, however, we must be wary of assuming that similarity of figures indicates agreement; or that agreement indicates accuracy.

[14] Robinson, Newcomb, Merrill, and Kiessling, *op. cit.*, p. 109.

METAL MINING:
Employment and Man-Hours, 1939
(Census vs. Bureau of Mines)

	Employment (men)		*Man-hours (1000)*	
	Bureau of Mines [a]	*Census* [b]	*Bureau of Mines*	*Census*
Lead and zinc:				
United States:				
Mines	n.a.	[c]12,930	n.a.	[c,d]24,548
Mills	n.a.	[c]3,352	n.a.	[c,d]6,641
Total	n.a.	[e]15,637	n.a.	[e]32,283
Mississippi Valley region: [d]				
Mines	[f]7,237	[c]5,811	[f]12,448	[c]10,206
Mills	[c]1,824	[c]1,824	[e]3,404	[e]3,404
Less: Fluorspar mines, Ill. and Ky.	[g]−1,169	..	[g]−2,360	..
Equals: Mississippi Valley lead and zinc [d]	[h]7,892	[c]6,849	[h]13,492	[c]14,337
Non-Mississippi Valley lead and zinc:				
Mines	n.a.	[h]7,119	n.a.	[i]14,341
Mills	n.a.	[h]1,528	n.a.	[i]3,238
Total	n.a.	[h,i]8,788	n.a.	[i]17,946
Copper:				
Mines	[f]18,436	[j]16,158	[f]42,100	[k]39,709
Mills	[l]4,644	[j]4,070	[l]10,677	[k]10,677
Total	[h]23,080	[j]23,844	[h]52,777	[k]51,241
Gold and silver:				
All mines	[f,m]53,214	n.a.	[f,m]92,673	n.a.
Less: Alaska	[f]−5,537	n.a.	[f]−8,995	n.a.
Less: Non-Mississippi lead and zinc mines	[n]−7,119	..	[n]−14,341	..
Total: U.S. gold and silver mines	[h]40,558	[o]21,550	[h]69,337	[o]50,490
mills	[p]3,201	[p]3,201	[p]7,476	[p]7,476
Total	[h]43,759	[q]24,751	[h]76,813	[q]57,966
Miscellaneous metals:				
Mines	[f]3,623	[r]2,683	[f]6,641	[r]5,332
Less: Pyrites mines	[s]−189	..	[s]−348	..
Equals: Metal mines	[h]3,434	..	[h]6,293	..
Mills	[r]1,437	[r]1,437	[r]2,932	[r]2,932
Total	[h]4,871	[r]4,030	[h]9,225	[r]8,384
All nonferrous metals:				
Mines	[h]75,615	[h]53,321	[h]142,159	[h]120,079
Mills	[h]12,634	[h]12,060	[h]27,727	[h]27,726
Total	[h]88,249	[h,t]68,262	[h]169,886	[h,t]149,874
Iron:				
Mines	[f]19,769	[u]19,195	[f]35,694	[u]33,694
Mills	[u]1,585	[u]1,585	[u]2,454	[u]2,454
Total	[h]21,354	[u]20,137	[h]38,148	[u]38,187
All metals:				
Mines	[h]95,384	[h]72,516	[h]177,853	[h]153,773
Mills	[v]17,800	[h]13,645	[v]39,327	[h]30,180
Total	[h]113,184	[h,t]88,399	[h]217,180	[h,t]188,061

(Turn page for Notes)

ML-12, Worksheet 4 (continued)

[a] Men subject to accident hazards; average number on active days only. Data for Alaska included throughout; important only for gold and silver. (*Min. Yearbook 1940, Review of 1939*, p. 163.)

[b] Wage earners; average for entire year (active and shutdown days together). "Employees were classified as wage earners on the basis of the type of work performed rather than on the basis of method or frequency of their compensation" (*1939 Census of Mineral Industries*, Vol. I, p. 7).

[c] *1939 Census of Mineral Industries*, Vol. I, pp. 400, 406, 415. These data are for producing operations only. The *separate* figures for mines and mills cover active days (when plant was not shut down) only. This probably accounts for employment summing to more than the total (since the total is the average of 12 monthly figures, including shutdown periods of nearly zero employment). It can also account for total man-hours being greater than the sum of mines and mills (in active periods).

[d] Mississippi Valley = Missouri, Kansas, Oklahoma, Wisconsin, Kentucky.

[e] *1939 Census*, Vol. I, p. 397.

[f] Bureau of Mines, *Metal and Nonmetal-Mine Accidents in the United States, 1939*, pp. 5, 23-24.

[g] *1939 Census*, Vol. I, p. 787 (Bureau of Mines included these fluorspar mines with the Mississippi Valley lead and zinc mines because, they said, the hazard conditions were similar).

[h] By addition of the relevant figures above.

[i] *1939 Census*, Vol. I, p. 397: Total wage earners in western region and eastern region.

[j] *1939 Census*, Vol. I, p. 386. Producing operations only; "average number of wage earners on active days" only. The two figures for number of wage earners in mines and mills on active days add to 20,228, whereas the figure for wage earners on all days (active and shutdown together) is given as 23,844 (p. 384); yet the former should be larger than the latter, as the latter includes in the average some days of zero (or very small) employment. This anomaly is not explained in the Census volume, but apparently could arise because for the former "each operator was requested to report the average number of wage earners employed on active days (usually for each shift) worked by each department of his operation"; while for the latter "operators were requested to report, for each month, the number of wage earners who actually received pay during the pay-roll period ending nearest the 15th of the month . . . including part-time as well as full-time workers" (p. 7).

[k] *1939 Census*, Vol. I, p. 386. The discrepancy between the "mines" plus "mills" figures and the total is 854(000) man-hours worked on inactive or shutdown days, which were not classified as between mines and mills.

[l] Because of the difficulty with the Census data on employment at mills (note j, above), we have estimated the ratio of employment at mills and mines from Census data (p. 386) and applied this ratio to the Bureau of Mines figure for employment at mines:

$$\frac{4{,}070}{16{,}158} \times 18{,}436 = 4{,}644.$$

There is no discrepancy in the Census figures on man-hours (only one set of figures is given), so we have used the Census figure (p. 386) without adjustment. No data on copper ore mills are given by the Bureau of Mines for 1939.

[m] "Including lead, zinc, copper" (*Min. Yearbook 1940, Review of 1939*, p. 1484)—apparently principally lead and zinc outside Mississippi Valley region (*ibid.*, p. 1488: "Includes . . . those producing some copper but operated chiefly for some other metal and those producing lead or zinc elsewhere than in the Mississippi Valley States." Mines "producing some copper but operated chiefly for some other metal" should *of course* be classified under the "other metal" (presumably gold and/or silver, in this case); the problem is not peculiar to copper, but arises also in the case of mines operated chiefly for their lead or zinc output, and for other metals as well.

These figures also include Alaskan mines.

[n] From the Census data on lead and zinc, above.

[o] By subtraction of the rough estimate for mills (see note p, below) from the Census total for establishments including mines and mills.

[p] There is no satisfactory way of estimating employment and man-hours in gold and silver mills. The earliest Bureau of Mines data are for 1943, when most gold mines had been closed by government order, so the ratios would not be typical. Progress in technology of mills, and closing of many mines, plus a revolution in the national unemployment picture, makes postwar figures also unsatisfactory.

The Census figures for gold are not good as a means of estimating Bureau of Mines figures, since there is a large difference between Census and Bureau of Mines estimates of employment in gold and silver mines. Moreover, Census gives no data for number of wage earners in gold mills and mines separately.

The expedient adopted here is to apply the Census ratio of man-shifts worked by wage earners in mills and mines to Census estimates of number of wage earners in lode mines. We have used Census number of wage earners rather than Bureau of Mines number in the thought that very small establishments, missed by Census (because of the omission of establishments with less than $2,500 gross output) would include fewer mills than mines. The Census ratio of workers in mills and mines would thus be too high to apply to the Bureau of Mines estimate of workers. The computation of employment is as follows (man-shifts are for active days only, wage earners are for producing operations only):

Gold (*1939 Census*, Vol. I, p. 346):

$$\frac{\text{man-shifts at mills}}{\text{man-shifts at lode mines and mills}} \times \text{wage earners at lode mines and mills:} \quad \frac{859{,}000}{5{,}150{,}000} \times 17{,}279 = 2{,}882.$$

In the case of silver, we have numbers of wage earners at mines and mills separately, but the total of these is less than that given for all producing operations (cf. note j, on copper, above). So we have applied the ratio for wage earners on active days, in mills and mines reported separately, to the wage earner total for all producing silver operations:

Silver (p. 370):

$$\frac{\text{mills (active days)}}{\text{mines (active days)}} \times \text{all wage-earners in producing operations:} \quad \frac{296}{296 + 3{,}642} \times 4{,}244 = 319.$$

Gold + silver: $2{,}882 + 319 = 3{,}201$.

For man-hour estimates, our expedients are simpler, as Census gives direct data on man-hours in gold mills (though the large discrepancy between Census and Bureau of Mines employment figures remains as a caveat); and in silver, we have only one set of figures, with no discrepancy, as we had for number of wage earners, above. The man-hours data:

Gold (p. 346):	6,773,000
Silver (p. 370):	703,000
	7,476,000

[q] *1939 Census*, Vol. I:

	Wage earners	*Man-hours*
p. 346: Gold	20,507	48,930
p. 370: Silver	4,244	9,036
Total	24,751	57,966
1954 Census, p. 10C-5:		
Gold	20,819	42,588 + 6,782 = 49,370
Silver	4,256	8,287 + 703 = 8,990
Total	25,075	58,360

[r] *1939 Census*, Vol. I, as follows:

Ore	Page ref.	*Wage earners (no.)*[1]			*Man-hours*[2]		
		Mines	*Mills*	*Total*	*Mines*	*Mills*	*Total*
Bauxite	425, 427	415	265	727	687	461	1,176
Chromite, antimony	429	n.a.	n.a.	31	n.a.	n.a.	59
Manganese	431, 434	346	174	504	630	321	959
Mercury	438, 441	591	209	602	1,099	286	1,388
Molybdenum	445, 446	455	284	910	1,210	773	1,987
Titanium	449	86	68	183	177	145	322
Tungsten	451, 454	576	234	690	1,112	495	1,614
Vanadium and uranium	457, 458	214	203	383	417	451	879
Total		2,683	1,437	4,030	5,332	2,932	8,384

[1] The total wage earner figures are the averages of 12 monthly figures reported by the operators (including active and inactive periods together, and part- and full-time employment together); the mines and mills figures are averages computed by the operators (according to their own lights) for active period only. In general, active day average employment should be larger than full year average employment, but in practice the active day averages are generally smaller (cf. note j, above).

[2] For man-hours, however, the totals (which include work on inactive days) are always as large as or larger than the sum of components covering active days only, because there are some man-hours on inactive days, and no question of method of averaging confuses the issue.

[s] *1939 Census*, Vol. I, p. 846.

[t] The Census totals are not the sum of the mines and mills figures *immediately* above, but of the totals (including mines and mills together) given for the various industries. These are different because of the different methods of collecting the figures, as noted above (see notes j and k, and others).

[u] *1939 Census*, Vol. I, pp. 321, 327. The total employment is less and the total man-hours more than the sum of their "components" for the reasons explained in note c, above.

[v] *Min. Yearbook Review of 1940*, p. 1433, gives total mill employment as 12,476; to this we have added an estimate for employment in "auxiliaries" to mills (shops, yards, construction, etc.) derived by applying to Barger & Schurr's estimate of man days at auxiliaries (p. 317) the ratio (on p. 311) of men to man-days for "other nonferrous metals." The figures are:

$$1{,}392{,}000 \times \frac{57{,}500}{14{,}060{,}000} = 5{,}700$$

$$5{,}700 + 12{,}476 = 18{,}176$$

From this we should deduct an estimate of men employed in mills in Alaska (Barger & Schurr, p. 318, fn. c, report no "auxiliaries" in Alaska). This we get from Barger & Schurr's estimate (p. 318) of man-days at mills in Alaska, by applying the same ratio as above, of men to man-days:

$$105{,}000 \times \frac{57{,}500}{14{,}060{,}000} = 429$$

$$18{,}176 - 429 = 17{,}800 \text{ (approx.)}$$

The man-hours estimates are derived in the same way, using Barger & Schurr's ratio of man-hours to man-days in "other nonferrous metals."

$$1{,}392{,}000 \times \frac{110{,}800{,}000}{14{,}060{,}000} = 11{,}000{,}000 \quad \text{man-hours in mill auxiliaries}$$

$$\text{plus } 27{,}500{,}000$$

$$\text{equals } 38{,}500{,}000 \quad \text{man-hours in mills}[1]$$

$$\text{plus } 105{,}000 \times \frac{110{,}800{,}000}{14{,}060{,}000} = 827{,}000 \quad \text{man-hours in Alaskan mills}$$

$$\text{equals } 39{,}327{,}000 \quad \text{total}$$

[1] *Min. Yearbook Review of 1940*, p. 1433.

As a check on our estimates of the employment and man-hours at mills in the different metals, above: The sum of the estimates of wage earners is 14,219, compared with our 17,800 total based on Bureau of Mines; the sum of the estimates of man-hours is 30,180,000 compared with Bureau of Mines' 39,327,000. Thus it appears that our estimates have averaged about 20% too low. Since these estimates are all taken from the Census reports (with the exception of copper), the difference may well be due to Census' having omitted some of the auxiliary operations as being more in the nature of manufacturing or construction.

ML-13. ALL METALS: Employment/Output

	Production workers (1000)	Output ($ million, 1954 prices)	Preferred series, employment/output (men per $1000 of output)		
			1902 prices	1929 prices	1954 prices
	A	B	C	D	E
1870	40	91	.74	.87	.44
1880	63	148	.97	.91	.43
1889	103	256	1.03	.87	.40
1902	129	598	.58	.46	.22
1909	154	859	.50	.38	.18
1919	140	997	.43	.30	.140
1920	134	1044	.41	.28	.128
1921	84	520	.47	.35	.162
1922	102	802	.39	.27	.127
1923	121	1123	.34	.23	.108
1924	122	1078	.35	.24	.113
1925	122	1178	.33	.22	.104
1926	124	1238	.32	.21	.100
1927	114	1170	.31	.21	.097
1928	109	1198	.29	.19	.091
1929	116	1335	.28	.18	.087
1930	96	1041	.30	.20	.092
1931	74	687	.33	.22	.108
1932	45	359	.35	.25	.125
1933	46	408	.32	.24	.113
1934	56	501	.32	.24	.112
1935	84	638	.38	.28	.132
1936	93	926	.30	.21	.100
1937	114	1241	.28	.19	.092
1938	101	756	.37	.27	.134
1939	113	1037	.32	.23	.109
1940	124	1304	.29	.20	.095
1941	131	1504	.27	.18	.087
1942	121	1694	.24	.15	.071
1943	107	1625	.22	.14	.066
1944	90	1476	.21	.13	.061
1945	76	1267	.21	.13	.060
1946	78	1022	.26	.17	.076
1947	89	1353	.22	.14	.066
1948	89	1392	.21	.14	.064
1949	83	1237	.22	.15	.067
1950	83	1444	.19	.12	.057
1951	86	1554	.19	.12	.055
1952	84	1440	.20	.12	.058
1953	91	1575	.20	.13	.058
1954	83	1251	.23	.14	.066
1955	82	1528	.19	.12	.054
1956	87	1560	.19	.12	.056
1957	93	1597	.20	.13	.058

ML-13, SOURCES

COL. A, Employment. Table ML-12, Col. J, transcribed.

COL. B, Output, 1954 prices. Table MO-7, Col. N, transcribed.

COLS. C and D, Preferred series, employment/output, in 1902 and 1929 prices. Computed as Col. E, except that 1902- and 1929-weighted output series from Table MO-7 were used.

COL. E, Preferred series, employment/output, 1954 prices. Col. A divided by Col. B.

ML-13, NOTES

For an alternative measure of the trend of employment/output in metals, see Table ML-3, Col. I.

ML-14. IRON ORE: Employment

(thousands)

	WPA-NRP, production workers	Barger & Schurr & Bu. Mines, production workers	BLS, production workers	Barger & Schurr, no. of men in mines	Census, production & development workers	Preferred series, production workers
	A	B	C	D	E	F
1870					[a]15.0	[a]15.0
1880	35.0				[b]30.4	[b]30.4
1889	36.3				[b]36.3	[b]36.3
1902	44.8				[c]39.1	44.8
1909					47.7	47.7
1911				46.0		50.7
1912				45.7		50.4
1913				51.1		56.3
1914				44.8		49.4
1915	43.4	43.4		39.4		43.4
1916	57.0	57.0				57.0
1917	60.6	60.6				60.6
1918	55.7	55.7				55.7
1919	51.8	51.8			46.3	51.8
1920	50.6	50.6				50.6
1921	32.3	32.3				32.3
1922	35.8	35.8				35.8
1923	41.3	41.3				41.3
1924	38.8	38.8				38.8
1925	35.8	35.8				35.8
1926	34.4	34.4				34.4
1927	34.8	34.8				34.8
1928	30.2	30.2				30.2
1929	30.8	30.8			28.6	30.8
1930	31.0	31.0				31.0
1931	22.9	22.9				22.9
1932	12.6	12.6				12.6
1933	15.1	15.1				15.1
1934	16.5	16.5				16.5
1935	15.0	15.0			14.9	15.0
1936	20.3	20.3				20.3
1937	25.9	25.9				25.9
1938		19.8				19.8
1939		21.9	21.1		20.4	21.9
1940		25.1	23.8			24.7
1941		28.6	28.3			29.4
1942		32.8	33.7			35.0
1943		33.3	35.3			36.6
1944		29.2	31.6			32.8
1945		26.8	26.5			27.5
1946		28.0	25.9			26.9
1947		29.8	31.6			32.8
1948		30.4	33.6			34.9
1949		31.5	30.4			31.6
1950		31.1	31.9			33.1
1951		34.3	33.8			35.1
1952		31.8	29.3			30.4
1953		30.8	35.4			36.7
1954		27.8	30.5		28.2	31.7
1955		23.3	29.7			30.8
1956		26.8	30.4			31.6
1957		25.7	33.9			35.2

ML-14, SOURCES

COL. A, WPA-NRP Report E-13, *Technology, Employment and Output per Man in Iron Mining* (Philadelphia, June 1940), p. 206, "Average number of men employed" (Census and Bureau of Mines data, the latter covering employees subject to accident hazards).

COL. B

1915-39. Barger & Schurr, p. 311, "Metal mining and ore dressing: Iron ore—Men."

1940-56. *Hist. Stat. 1960,* series M-204, "Average workers on active days" (Bureau of Mines).

1957. *Min. Yearbook 1958,* Vol. I, p. 119.

COL. C, BLS *Emp. & Earnings* Bulls., "Production and related workers" (based on Social Security data).

COL. D, Barger & Schurr, p. 321, number of men in mines (excluding mills) (Bureau of Mines).

COL. E, *1954 Census of Mineral Industries,* p. 10B-2, "Production and development workers."

COL. F, Preferred series, production workers in mines and mills

1870-89, 1909. Col. E, transcribed.

1902, 1915-37. Col. A, transcribed.

1911-14. Col. D linked to Col. A at 1915 (ratio, 1.102).

1938-39. Col. B, transcribed.

1940-57. Col. C linked to Col. B at 1939 (ratio, 1.038).

ML-14, NOTES

[a] All workers.

[b] 1880 and 1889 Census data are for active periods only; other years include shutdown periods in computing average employment.

[c] Number of employed was reduced to a 300-day basis for those who worked a shorter period; e.g., a man employed 200 days was counted as 200/300, or ⅔ of a worker.

"Production workers" may or may not include those in auxiliary transport, milling, and maintenance.

ML-15. IRON ORE: Employment/Output

	Output (mil. long tons)	Employment, production workers (1000)	Preferred series, employment/output (workers per 1000 tons)
	A	B	C
1870	3.83	[a]15.0	3.92
1880	7.12	[b]30.4	4.27
1881	7.12		
1882	9.00		
1883	8.40		
1884	8.20		
1885	7.60		
1886	10.0		
1887	11.3		
1888	12.1		
1889	14.5	[b]36.3	2.5
1890	16.0		
1891	14.6		
1892	16.3		
1893	11.6		
1894	11.9		
1895	16.0		
1896	16.0		
1897	17.5		
1898	19.4		
1899	24.7		
1900	27.5		
1901	28.9		
1902	35.5	44.8	1.26
1903	35.0		
1904	27.6		
1905	42.5		
1906	47.7		
1907	51.7		
1908	36.0		
1909	51.3	47.7	.93
1910	57.0		
1911	43.9	50.7	1.16
1912	55.1	50.4	.914
1913	62.0	56.3	.908
1914	41.4	49.4	1.19
1915	55.5	43.4	.782
1916	75.2	57.0	.758
1917	75.3	60.6	.805
1918	69.7	55.7	.800
1919	61.0	51.8	.850
1920	67.6	50.6	.748
1921	29.5	32.3	1.10
1922	47.1	35.8	.760
1923	69.3	41.3	.596
1924	54.3	38.8	.715
1925	61.9	35.8	.578
1926	67.6	34.4	.509
1927	61.7	34.8	.564
1928	62.2	30.2	.486
1929	73.0	30.8	.422
1930	58.4	31.0	.531
1931	31.1	22.9	.736
1932	9.8	12.6	1.28
1933	17.5	15.1	.860
1934	24.6	16.5	.671
1935	30.5	15.0	.491
1936	48.8	20.3	.416
1937	72.1	25.9	.359
1938	28.4	19.8	.696
1939	51.7	21.9	.423
1940	73.7	24.7	.335
1941	92.4	29.4	.318
1942	105	35.0	.332
1943	101	36.6	.363
1944	94.1	32.8	.348
1945	88.4	27.5	.311
1946	70.8	26.9	.380
1947	93.1	32.8	.352
1948	101	34.9	.346
1949	84.9	31.6	.372
1950	98.0	33.1	.338
1951	116	35.1	.301
1952	97.9	30.4	.310
1953	118	36.7	.312
1954	78.1	31.7	.406
1955	103	30.8	.299
1956	98	31.6	.322
1957	106	35.2	.332

ML-15, SOURCES

Col. A, Output. Table MO-8, Col. A, transcribed.
Col. B, Employment. Table ML-14, Col. F, transcribed.
Col. C, Preferred series, employment/output. Ratio, Col. B/Col. A.

ML-15, NOTES

[a] All workers.

[b] 1880 and 1889 Census data are for active periods only; other years include shutdown periods in computing average employment.

ML-16. MANGANESE: Employment and Employment/Output

	Preferred series, employment: Production workers (1000)	Shipments (1000 tons)		Workers per 1000 tons	
		Preferred series, Bu. Mines (MO-11)	Census	Alternate series, Col. A / Col. B	Preferred series, Col. A / Col. C
	A	B	C	D	E
1880	.21	6.45	12	32	18
1889	.40	27.1	27	15	15
1902	[a].194	8.38	18	23	11
1909	.088	1.73	n.a.	51	–
1919	.909	61.6	n.a.	15	–
1929	.354	67.6	46	5.2	7.7
1939	.504	32.8	54	15	9.3
1954	2.27	206	510	11	4.5

ML-16, SOURCES

Col. A, Preferred series, employment. *1954 Census of Mineral Industries,* p. 10I-2, "Ferroalloy ores," Table 1, line 14, production and development workers, for 1902-54; line 13, "Total persons engaged," used to extrapolate production and development workers for 1880-1902 (ratio, 0.915).

Col. B, Preferred series, output. Table MO-11, Col. B, transcribed.

Col. C, *1954 Census of Mineral Industries,* p. 10I-2, "Ferroalloy ores: Manganese ore and concentrates," long tons converted to short tons (duplication in shipments eliminated: p. 10I-4, n. 6).

Col. D, Alternate series, employment/output. Ratio, Col. A/Col. B.

Col. E, Preferred series, employment/output. Ratio, Col. A/Col. C.

ML-16, NOTES

[a] Number of employed was reduced to a 300-day basis for those who worked a shorter period.

The two output series are markedly different. The Bureau of Mines figure for ore of more than 35% Mn seems the best available preferred series. However, the Census figures, which report much low grade ore, seem preferable as probably more consistent with the employment data, gathered in the same canvass.

ML-17. TUNGSTEN: Output, Employment and Employment/Output

	Census, production workers	Output (1000 tons of tungsten)		Employment/output (workers per ton)	
		Bu. Mines	Census	Col. A / Col. B	Col. A / Col. C
	A	B	C	D	E
1902	2	.088		.02	
1909	181	.770		.24	
1929	186	.395		.47	
1939	701	2.04	1.50	.34	.47
1954	2635	6.51	6.28	.40	.42

ML-17, SOURCES

Col. A, Employment. *1954 Census of Mineral Industries,* p. 10I-3, line 14, production and development workers.

Col. B, Output, Bureau of Mines. *Hist. Stat. 1960,* series M-215, "Domestic output" (metallic content).

Col. C, Output, Census. *1954 Census,* p. 10I-3, line 6, tungsten concentrates.

Col. D, Employment/output. Ratio, Col. A/Col. B.

Col. E, Employment/output. Ratio, Col. A/Col. C.

ML-17, NOTES

Col. C. The Census report is in thousand short ton units of WO_3 contained. One "short ton unit" is 20 pounds of WO_3, or 15.9 pounds of tungsten. This factor has been applied to compute tungsten content.

The Col. E series may be reasonably valid; it seems very doubtful that the Col. D series is valid. Erratic results are to be expected in so small an industry, however. 1954 output (and presumably employment/output ratio) was stimulated by a government subsidy program.

ML-18. COPPER: Employment

(thousands)

	Barger & Schurr, mine & mill production workers	WPA-NRP, mine workers	Col. A / Col. B	BLS, mine & mill production workers	Census, mine & mill production & development workers	Bureau of Mines			Preferred series, mine & mill production workers
						Mines, men working daily	Mills & auxiliaries, men working daily	Total men in mines & mills	
	A	B	C	D	E	F	G	H	I
1870					[a] 5.40				[a] 5.40
1880		6.04			[a] 6.04				[a] 6.04
1889		[b] 9.75			8.52				8.52
1902		26.3			26.3				26.3
1909					[c] 45.5				[c] 45.5
1911		44.7				44.7			51.6
1912		51.8				51.8			59.8
1913		56.1				56.1			64.8
1914		44.7				44.7			51.6
1915	54.5	47.2	1.155			47.2			54.5
1916	70.5	61.2	1.151			61.2			70.5
1917	72.6	61.3	1.185			61.3			72.6
1918	69.2	59.4	1.164			59.4			69.2
1919	44.7	39.3	1.137		43.7	39.3			44.7
1920	41.4	35.3	1.174			35.3			41.4
1921	20.9	18.3	1.142			18.3			20.9
1922	30.6	25.7	1.189			25.7			30.6
1923	38.0	32.5	1.170			32.5			38.0
1924	39.2	32.5	1.207			32.5			39.2
1925	39.8	33.3	1.196			33.3			39.8
1926	40.5	32.7	1.238			32.7			40.5
1927	37.3	30.7	1.214			30.7			37.3
1928	37.5	30.6	1.227			30.6			37.5
1929	44.6	37.1	1.201		44.5	37.1			44.6
1930	33.8	27.7	1.221			27.7			33.8
1931	24.8	19.7	1.260			19.7			24.8
1932	12.7	9.6	1.329			9.6			12.7
1933	9.0	7.0	1.290			7.0			9.0
1934	10.3	8.1	1.274			8.1			10.3
1935	13.1	10.2	1.286			10.2			13.1
1936	17.7	14.1	1.255			14.1			17.7
1937	27.0					21.2			27.0
1938	21.6					17.6			21.6
1939	23.2			25.0	23.8	18.4			23.2
1940				29.4		19.5			27.3
1941				32.8		21.6			30.4
1942				34.0		23.2	6.8	30.0	31.6
1943				33.3		23.7	7.1	30.8	30.9
1944				27.4		18.8	6.6	25.4	25.4
1945				21.8		14.5	5.9	20.4	20.2
1946				20.5		13.0	5.6	18.6	19.0
1947				24.6		15.7	5.8	21.5	22.8
1948				24.6		16.3	6.3	22.6	22.8
1949				23.1		16.0	6.6	22.6	21.4
1950				22.8		15.4	5.8	21.2	21.2
1951				22.6		16.3	6.0	22.3	21.0
1952				22.9		14.9	6.1	21.0	21.3
1953				24.5		15.9	6.2	22.1	22.7
1954				23.8	21.5	16.1	7.1	23.2	22.1
1955				24.4		17.0	6.2	23.2	22.6
1956				28.3		18.1	6.7	24.8	26.3
1957				27.3		17.7	7.1	24.8	25.3

ML-18, SOURCES

COL. A, Barger & Schurr, p. 311, "Thousands of men employed" (at mines and mills).

COL. B, WPA-NRP Report E-12, *Technology, Employment, and Output per Man in Copper Mining* (Philadelphia, Feb. 1940), p. 214, "Employment at copper mines."

COL. C, Ratio, Col. A/Col. B.

COL. D, BLS *Emp. & Earnings* Bull., May 1959, p. 70, and BLS summary sheets for 1939-50.

COL. E, *1954 Census of Mineral Industries*, p. 10D-3, "Copper ores industry: Production and development workers."

COL. F

1911-42. Bureau of Mines Bulletin 461, *Metal and Nonmetal Mine Accidents in the United States, 1942*, p. 54.

1943-57. "Employment and Injuries in the Metal and Nonmetal Industries," from *Minerals Yearbook* for various years. These figures cover mines only; exclude ore mills and auxiliary shops.

COL. G, *Minerals Yearbooks, loc. cit.*

COL. H, Col. F plus Col. G.

COL. I, Preferred series

1870-1909. Col. E, transcribed.

1911-14. Col. B linked to Col. A series at 1915 (ratio, 1.155).

1915-39. Col. A, transcribed.

1940-57. Col. D linked to Col. A series at 1939 (ratio, .9280).

ML-18, NOTES

[a] Includes some smelting and refining operations.

[b] The source of this figure is given as 1902 Census Report. However, the *1889 Census* gives 8.61 and the *1954 Census*, 8.52 (excluding foremen—198 men, or .20 thousands—which NRP includes).

[c] Smelting and refining workers (included in the original *1909 Census*) excluded by subtracting 13%, on basis of estimate by authors of the *1954 Census* (p. 10D-4, fn. 2).

Col. A. Barger & Schurr data based on Bureau of Mines data, adjusted to include mills and auxiliary works and exclude smelter-auxiliaries. Mill-auxiliaries were estimated by applying ratios from "all metal mining," annually 1916-39. (Ranging from 19% to 43% of mill employment, 3 to 8% of total mine and mill employment.)

Col. B. WPA-NRP data from Census for 1880, 1889, 1902; from Bureau of Mines accident data, 1911-36. Excludes mills, which is main difference from Barger & Schurr (Col. A); *1902 Census* gave "men" in terms of 300-day years (a man working 250 days was counted as 250/300, or ⅚ of a man).

These data are all in close agreement, though they come from two, and in recent years three, independent sources. For reconciliation of Bureau of Mines and Census data (for 1939), see Table ML-12, Worksheet 4.

ML-19. COPPER: Employment/Output

	Output (1000 tons)	Employment (1000 men)	Preferred series, employment/output (men per ton)
	A	B	C
1870	14.1	5.40	.383
1871	14.6		
1872	14.0		
1873	17.4		
1874	19.6		
1875	20.2		
1876	21.3		
1877	23.5		
1878	24.1		
1879	25.8		
1880	30.2	6.04	.200
1881	35.8		
1882	45.3		
1883	57.8		
1884	72.5		
1885	82.9		
1886	78.9		
1887	90.7		
1888	113		
1889	113	8.52	.075
1890	130		
1891	142		
1892	172		
1893	165		
1894	177		
1895	190		
1896	230		
1897	247		
1898	263		
1899	284		
1900	303		
1901	301		
1902	330	26.3	.080
1903	349		
1904	406		
1905	444		
1906	459		
1907	434		
1908	471		
1909	546	45.5	.083
1910	540		
1911	549	51.6	.094
1912	622	59.8	.096
1913	612	64.8	.106
1914	575	51.6	.090
1915	694	54.5	.079
1916	964	70.5	.073
1917	943	72.6	.077
1918	954	69.2	.073
1919	643	44.7	.070
1920	605	41.4	.068
1921	253	20.9	.083
1922	475	30.6	.064
1923	718	38.0	.053
1924	817	39.2	.048
1925	837	39.8	.048
1926	870	40.5	.047
1927	842	37.3	.044
1928	913	37.5	.041
1929	1001	44.6	.045
1930	697	33.8	.048
1931	521	24.8	.048
1932	272	12.7	.047
1933	225	9.0	.040
1934	244	10.3	.042
1935	381	13.1	.034
1936	611	17.7	.029
1937	835	27.0	.032
1938	562	21.6	.038
1939	713	23.2	.033
1940	909	27.3	.030
1941	966	30.4	.031
1942	1088	31.6	.029
1943	1093	30.9	.028
1944	1003	25.4	.025
1945	783	20.2	.026
1946	600	19.0	.032
1947	863	22.8	.026
1948	842	22.8	.027
1949	758	21.4	.028
1950	911	21.2	.023
1951	931	21.0	.023
1952	927	21.3	.023
1953	943	22.7	.024
1954	834	22.1	.026
1955	1007	22.6	.022
1956	1118	26.3	.024
1957	1081	25.3	.023

ML-19, SOURCES

Col. A, Output. Table MO-13, Col. B, transcribed.
Col. B, Employment. Table ML-18, Col. I, transcribed.
Col. C, Preferred series, employment/output. Ratio, Col. B/Col. A.

ML-19, NOTES

See the source tables from which these ratios were computed. In general, despite numerous small problems, these series are among the "cleanest" available for any resource industry.

ML-20. LEAD AND ZINC: Employment

	1954 Census, production & development workers (1000)	BLS, index of production workers (1947-49 = 100)	WPA-NRP, wage earners (1000)	Bu. of Mines men in mines and plants (1000)	Col. F / Col. D	Preferred series, production & development workers (1000)
	A	B	C	D	E	F
1870	[a]1.71					[a]1.71
1902	[b]7.95					[b]7.95
1909	17.0					17.0
1919	21.88		20.18			21.88
1920			21.89			23.07
1921			11.59			12.22
1922			17.44			18.38
1923			20.84			21.97
1924			24.11			25.41
1925			26.42			27.85
1926			29.39			30.98
1927			25.46			26.83
1928			23.70			24.98
1929	25.91		24.59			25.91
1930			16.46			17.35
1931			10.55			11.12
1932			6.76			7.13
1933			6.89			7.26
1934			8.57			9.03
1935			10.06			10.60
1936			11.92			12.56
1937						
1938						
1939	15.73	84.9				15.73
1940		97.4				18.05
1941		101.6				18.83
1942		106.8				19.79
1943		119.8				22.20
1944		108.3		19.81	1.013	20.07
1945		94.8		19.01	.924	17.57
1946		101.6		20.32	.927	18.83
1947		107.8		21.01	.951	19.98
1948		99.5		20.11	.917	18.44
1949		92.7		20.35	.844	17.18
1950		87.5		17.53	.925	16.21
1951		93.2		17.96	.962	17.27
1952		96.4		20.39	.876	17.86
1953		78.6		17.68	.824	14.56
1954	13.59	71.4		14.31	.950	13.59
1955				15.32	.907	13.90
1956				14.02	.907	12.72
1957				15.06	.907	13.66

ML-20, SOURCES

Col. A, *1954 Census of Mineral Industries*, p. 10E-4, "Lead and zinc ores industries, total: Production and development workers."

Col. B, Bureau of Labor Statistics, *Trends in Output per Man-Hours, 1935-55: Selected Nonmanufacturing Industries* (Report No. 105, June 1956), Table 5.

Col. C, WPA-NRP Report S-2, sum of Col. 1 and Col. 5, Table A-11, and Col. 1, Table A-12 (Eastern, Central, and Western states totaled).

Col. D, *Minerals Yearbooks*, chapter on employment and injuries in the metal and nonmetal industries, men working daily, in lead and zinc mines plus ore-dressing plants.

Col. E, Ratio, Col. F/Col. D.

Col. F, Preferred series, production workers, mines and mills

1870-1919, 1929, 1939, 1954. Col. A, transcribed.

1920-36 (except 1929). Col. C times the ratio of Col. A/Col. C in 1929 (ratio, 1.054).

1940-53. Col. B times the ratio of Col. A/Col. B in 1939 (ratio, 0.1853).

1955-57. Col. D times the 1950-54 average ratio in Col. E (ratio, .907).

ML-20, NOTES

[a] Includes all other employees.

[b] Figures for average employment were reduced to a 300-day basis for establishments which operated for a shorter period.

Slight differences in the ratios of our interpolation series to Census in the different Census years have not been taken into account, as for example by interpolating the ratios over the decades. The result is a possible discrepancy or irregularity in the year-to-year changes for 1919-20, 1936-39, and 1953-54.

ML-21. LEAD AND ZINC: Employment/Output

	Output (1000 tons)	Production & development workers (1000)	Preferred series, employment/output (workers per 1000 tons)
	A	B	C
1902	477	7.95	16.7
1909	655	17.0	26.0
1915	1095		
1916	1255		
1917	1262		
1918	1176		
1919	973	21.9	22.5
1920	1065	23.1	21.7
1921	655	12.2	18.6
1922	941	18.4	19.5
1923	1154	22.0	19.1
1924	1204	25.4	21.1
1925	1366	27.8	20.4
1926	1455	31.0	21.3
1927	1387	26.8	19.3
1928	1321	25.0	18.9
1929	1396	25.9	18.6
1930	1169	17.4	14.9
1931	800	11.1	13.9
1932	540	7.13	13.2
1933	644	7.26	11.3
1934	739	9.03	12.2
1935	829	10.6	12.8
1936	964	12.6	13.0
1937	1069		
1938	849		
1939	1005	15.7	15.6
1940	1098	18.0	16.4
1941	1220	18.8	15.4
1942	1235	19.8	16.0
1943	1151	22.2	19.3
1944	1113	20.1	18.0
1945	971	17.6	18.1
1946	868	18.8	21.7
1947	1019	20.0	19.6
1948	969	18.4	19.0
1949	997	17.2	17.2
1950	1042	16.2	15.6
1951	1024	17.3	16.9
1952	1049	17.9	17.0
1953	875	14.6	16.6
1954	795	13.6	17.1
1955	836	13.9	16.6
1956	891	12.7	14.2
1957	880	13.7	15.6

ML-21, SOURCES

COL. A, Output. Table MO-14, Col. D, plus Table MO-15, Col. H.

COL. B, Employment. Table ML-20, Col. F, transcribed.

COL. C, Preferred series, employment/output. Ratio, Col. B/Col. A.

ML-21, NOTES

The low employment/output ratio for 1902 is an indication of Census undercoverage. A further point in evidence is Census' value of shipments: $14.6 million (*1954 Census of Mineral Industries*, p. 10E-5), which is 34% of the total value of lead and zinc produced, as calculated by multiplying prices of pig by quantities (our Tables MP-20 times MO-14 and MP-21 times MO-15). In 1909 and 1919, where the data here seem in line with the trend, the ratios of Census to our price times quantity calculations are .45 and .58.

In addition, the 1902 employment is probably low by something like 20% because the 1902 Census reduced all employment to a 300-day-year basis.

Col. A. Prices of lead and zinc over the period 1870-1957 differed in both directions, with zinc averaging somewhat higher, though lead was somewhat higher in the later years. The equal weighting used here approximates long-term average values.

ML-22. BAUXITE: Employment and Employment/Output

	Census, production & development workers (1000)	Census, shipments to consumers (1000 long tons)	Bauxite output, Table MO-16	Preferred series, employment/output (workers per 1000 long tons)
	A	B	C	D
1902	.150	29	27	5.17
1909	.563		132	4.26
1919	.738		377	1.96
1929	.602	365	366	1.65
1935	.559		245	2.28
1939	.727	388	375	1.87
1954	.661	1766	1995	0.37

ML-22, SOURCES

COL. A, *1954 Census of Mineral Industries,* p. 10H-1, "Bauxite industry: Production and development workers."

COL. B, *Ibid.,* "Shipments of bauxite to consumers (dried bauxite equivalent)."

COL. C, Table MO-16, Col. A, transcribed.

COL. D, Preferred series, employment/output. Ratio, Col. A/Col. B, except for 1909, 1919, and 1935; for those years the ratio is Col. A/Col. C.

ML-23. MERCURY: Employment and Employment/Output

	Preferred series, employment (1000 men)	Output (1000 flasks)	Preferred series, employment/ output (men per 1000 flasks)
	A	B	C
1870	[a].811	30.1	27
1889	[b].917	26.6	34
1902	[c]1.364	34.5	40
1909	.622	20.8	30
1919	.748	21.1	35
1929	1.029	23.8	43
1939	.621	18.2	34
1954	.372	17.5	21

ML-23, SOURCES

COL. A, Preferred series, employment. *1954 Census of Mineral Industries,* p. 10K-2, "Mercury ores industry: Production and development workers."

COL. B, Output. Table MO-18, Col. A, transcribed (1870, 1909, and 1919 from Table MO-18, Col. B).

COL. C, Preferred series, employment/output. Ratio, Col. A/Col. B.

ML-23, NOTES

[a] All employees.

[b] Average number employed during the time the mines were active.

[c] Number of workers reduced to a 300-day basis for establishments operating for shorter periods.

ML-24. GOLD AND SILVER: Employment

ML-24, SOURCES

Col. A, Bureau of Mines Bulletin 461, *Metal and Nonmetal-Mine Accidents in the United States, 1942*, p. 55, Table 40, gold, silver, and misc. metal mines (including non-Mississippi Valley lead and zinc and some copper), number of employees.

Col. B, *Min. Yearbook 1938*, p. 1321; *1939*, p. 1416; *1940, Review of 1939*, p. 1484; *Review of 1940*, p. 1426; *1941*, p. 1540; *1944*, p. 1549: "Number of men employed, gold, silver, placer gold" (including non-Mississippi Valley lead and zinc).

Col. C, WPA-NRP Report S-2, Average number of wage earners, excluding shutdown periods: gold and silver and minor metals other than mercury (Worksheet 1 of this table, Cols. A plus B).

Col. D, Non-Mississippi Valley lead and zinc

1919-36. Worksheet 1 of this table, Col. G.

1937-38. Extrapolated from 1936 on the basis of Mississippi Valley lead and zinc.

1939-42. Col. G (all lead and zinc employment) minus Mississippi Valley lead and zinc, from Bureau of Mines Bulletin 461, *loc. cit.*

Col. E, Table ML-20, Col. B, transcribed.

Col. F, Bureau of Mines Information Circular 7798, *Injury Experience in the Metal and Nonmetal Industries, 1954*, Table 34, lead-zinc mines, average number of men working daily.

Col. G, Col. E linked to Col. F at 1943-44 (ratio, 0.1603).

Col. H, Employment at miscellaneous metal mines. *Min. Yearbook 1938*, p. 1321; *Review of 1939*, p. 1484; *1940*, p. 1426; *1941*, p. 1540; *1944*, p. 1549: "Number of men employed, metal mines, misc." 1919 and 1929 from *1939 Census of Mineral Industries*, Vol. I, p. 24, total bauxite, manganese, mercury and other metallic ores.

Col. I, Gold and silver mining industry. *1954 Census of Mineral Industries*, p. 10C-4, "Production and development workers" in lode gold, placer gold, and silver ores.

Col. J, Preferred series, number of men in mines, subject to accident hazards, average during periods mines were active.

1870-1909. Col. I, transcribed (presumably includes ore-dressing plants attached to mines).

1919-36. Col. C minus Col. H.

1937-42. Col. B minus Col. D.

1943-53. Bureau of Mines Information Circular 7798, Table 32, gold-silver lode mines, average number of men working daily, plus Table 42, gold placer mines, number of men working daily (excludes men in ore-dressing plants).

(thousands)

	Bu. Mines, gold & silver plus non-Miss. lead & zinc plus misc.	Bu. Mines, gold & silver plus non-Miss. lead & zinc plus some copper	NRP, lode gold & silver plus misc. minor metals plus placer gold	NRP & Bu. Mines, non-Miss. lead & zinc	BLS, index, lead & zinc workers (1947-49 = 100)	Bu. Mines, lead & zinc workers	Lead & zinc, Col. E linked to Col. F at 1943-44	Bu. Mines & Census, mines for misc. minor metals	Census, production workers	Preferred series, gold & silver, av. no. of mine workers
	A	B	C	D	E	F	G	H	I	J
1870									[a]16.9	[a]17
1880									18.9	19
1889									53.1	53
1902									[b]47.9	48
1909									42.4	42
1915	45.3									
1916	60.1									
1917	51.9									
1918	43.6									
1919	32.1		22.1	8.3				3.06	16.8	19.0
1920	29.9		18.2	10.2				(2.6)		15.6
1921	26.5		19.8	5.65				(2.6)		17.2
1922	27.6		17.7	8.6				(2.6)		15.1
1923	30.5		19.2	9.9				(2.6)		16.6
1924	29.7		18.5	9.8				(2.6)		15.9
1925	33.2		18.9	13.1				(2.6)		16.3
1926	33.9		18.0	14.5				(2.6)		15.4
1927	30.5		15.5	13.2				(2.6)		12.9
1928	31.6		16.2	13.3				(2.6)		13.6
1929	30.9		14.6	13.8				2.63	8.5	12.0
1930	27.0		15.0	9.9				(2.7)		12.3
1931	24.3		15.6	6.72				(2.7)		12.9
1932	21.1		14.6	5.32				(2.8)		11.8
1933	23.8		16.8	5.77				(2.8)		14.0
1934	29.8		21.5	6.43				(2.8)		18.7
1935	53.0	50.1	44.8	6.37				2.90		41.9
1936	51.2	48.0	42.0	7.00				3.20		38.8
1937	55.8	51.6		(8.8)				4.20		42.8
1938	51.5	47.5		(6.7)				3.94		40.8
1939	56.8	53.2		6.36	84.9		13.6	3.62	25.1	46.8
1940	59.9	54.8		7.96	97.4		15.6	6.61		46.8
1941	58.1	51.6		7.67	101.6		16.3	5.40		43.9
1942	39.5	31.4		7.54	106.8		17.1	8.03		23.9
1943		16.3			119.8	20.07	19.2			5.25
1944		12.2 p			108.3	16.58				4.00
1945					94.8	14.64				5.64
1946					101.6	15.93				8.61
1947					107.8	16.63				9.46
1948					99.5	16.11				9.05
1949					92.7	16.33				8.83
1950					87.5	14.04				8.57
1951					93.2	14.52				6.91
1952					96.4	16.74				6.08
1953					78.6	13.50				5.80
1954									4.2	5.06
1955										4.20
1956										4.17
1957										4.96

1954. *Ibid.*, Table 5, employment data: Men at work, total, gold-silver lode, plus placer.

1955-57. *Min. Yearbook 1958,* Vol. I, p. 119, Gold placer plus gold and silver lode.

ML-24, NOTES

p Preliminary data.

( ) Rough interpolation.

[a] "Probably understated" according to source. Includes all workers, not just production workers.

[b] Employees reduced to a 300-day basis for establishments working a shorter year. Those working 200 days were counted ⅔ of a worker, etc.

This complicated table of adjustments is necessitated by the varying combinations which the Bureau of Mines has made of gold, silver, and other metals: For 1943-57, gold and silver are clearly reported separately. For 1919-42, it is necessary to subtract employment in lead and zinc mines outside the Mississippi Valley states, as well as in miscellaneous metal mines.

For 1919-36, this was done for lead and zinc by the WPA National Research Project, which made special tabulations (Cols. C and D) with the help of the Bureau of Mines. Miscellaneous minor metal mines were not separated, however, and we have "filled in" with Census figures for 1919 and 1929, with Bureau of Mines figures for 1935-36, and with rough interpolations for the intervening years (Col. H).

For 1939-42, we have made an estimate of all lead and zinc employment by use of the BLS index (Col. G), and subtracted the lead and zinc employment in the Mississippi Valley states (Worksheet 1, below), to give an estimate of non-Mississippi lead and zinc employment (Col. D for 1939-42). This we have subtracted from the "gold and silver" (excluding "miscellaneous metals") data of the Bureau of Mines, which included non-Mississippi lead and zinc.

The result is a somewhat rough estimate of employment in the mining of these precious metals,

— including Alaska as well as the United Stated proper.

— covering mines only, and not ore mills, etc.

These two items are to some extent offsetting, of course, though Alaskan gold and silver mines have probably employed more men than ore mills in the United States proper. Thus our data run a little too high, in varying degree, from year to year. An idea of the magnitudes in the last 35 years is given by the following attempt at reconciliation of Bureau of Mines and Census figures:

1954: Bur. Mines	5.06	(from table, above)
Less: Alaska	—1.60	(Employment at gold and silver mines: Bureau of Mines Circular 7798, pp. 23, 30)
Total	3.46	
Plus: Ore mills	.38	*Min. Yearbook 1954,* Vol. I, p. 111
	3.84	

This 3.8 (000) is to be compared with Census' 4.2.

1939: See Table ML-12, Worksheet 4.

1929: Bur. Mines	12.00	
Less: Alaska	—3.06	(Gold, silver, and misc. metal mines in Alaska — mostly gold and silver: *Metal-Mine Accidents in the U.S. 1929,* p. 20)
Total	8.94	
Plus: Ore mills	.90	(No data available; this estimate is 10% of those in mining, which is approximately the ratio in 1939 and 1954)
	9.8	

This 9.8 is to be compared with Census' 8.5.

1919: Bur. Mines	19.0	
Less: Alaska	—2.4	(Gold, silver, and misc. metals in Alaska — mostly gold and silver: *Metal-Mine Accidents in the U.S. 1919,* p. 29)
Total	16.6	
Plus: Ore mills	1.7	(No data available. Estimated at 10% of men in mines)
	18.3	

This 18.3 is to be compared with Census' 16.8.

Thus, Bureau of Mines data run higher in all Census years, 1919 to 1939—probably because of more coverage of very small operations, though differences arise also because of differences between Mines average of workers subject to hazards and Census coverage of "wage earners" or manual laborers. There are no doubt further differences in the inclusion of "auxiliary" shops, yards, construction establishments, etc., as well as the differences in classifying mines producing several metals and the difference in the method of averaging—Census averages active and shutdown periods together, Mines averages only the active periods. See Table ML-12, Worksheet 4.

For 1870-1909, we have used the Census figures without adjustment, despite the disparities just noted, because coverage and systems of counting appear to be so erratic as to raise serious doubts about fine adjustments. The *1909 Census,* for example, on p. 322, reported 54,011 wage earners for all gold and silver mines on a *"representative day"; the 1939 Census* (p. 340) reported 32,512 *average* 1909 employment for "producing" operations, and the *1954 Census* (p. 10C-7) cited 42,395 production workers in 1909 for all operations "including some *smelting and refining operations."* The first and last figures may be derived by recombinations of the *1909 Census* published figures, though the *average* wage earners for *producing* operations (reported for 1909 in the 1939 Census) could only be estimated from the data published in the *1909 Census.* The point is, however, the variable nature of definitions used and combinations provided by the various censuses.

See also the discussion accompanying Table ML-12, Worksheet 4, above.

ML-24, WORKSHEET 1. GOLD AND SILVER: Employment

(excluding shutdown periods; thousands)

	WPA - NRP					Bull. 461, Miss. Valley lead and zinc	Non-Miss. lead and zinc (Col. E minus Col. F)
	Lode gold & silver plus misc. minor metals exc. mercury	Placer gold	Lead & zinc, eastern and western states	Lead & zinc, central states	All lead & zinc (Col. C plus Col. D)		
	A	B	C	D	E	F	G
1915						13.0	
1916						20.6	
1917						20.3	
1918						14.0	
1919	15.8	(6.31)	9.50	11.8	21.3	13.0	8.3
1920	12.8	(5.40)	11.7	10.1	21.8	11.6	10.2
1921	13.7	(6.07)	6.56	6.05	12.6	6.95	5.65
1922	12.9	(4.82)	9.43	8.03	17.5	8.90	8.60
1923	14.3	(4.94)	11.0	9.06	20.1	10.2	9.9
1924	14.5	4.04	10.8	11.7	22.5	12.7	9.8
1925	14.8	4.07	14.0	12.0	26.0	12.9	13.1
1926	13.8	4.23	15.6	13.4	29.0	14.5	14.5
1927	11.2	4.28	14.4	11.3	25.7	12.5	13.2
1928	12.5	3.74	14.5	9.12	23.6	10.3	13.3
1929	10.7	3.86	15.1	9.93	25.0	11.2	13.8
1930	11.3	3.68	11.1	7.33	18.4	8.52	9.88
1931	11.9	3.74	7.62	5.28	12.9	6.18	6.72
1932	10.3	4.30	5.96	3.36	9.32	4.00	5.32
1933	12.1	4.72	6.51	3.84	10.4	4.63	5.77
1934	16.3	5.18	7.74	3.78	11.5	5.07	6.43
1935	31.8	13.0	7.56	5.57	13.1	6.73	6.37
1936	31.6	10.4	8.62	5.09	13.7	6.70	7.00
1937						8.47	
1938						6.44	
1939						7.24	
1940						7.64	
1941						8.63	
1942						9.56	

ML-24, Worksheet 1, SOURCES

COL. A, WPA-NRP Report S-2, Table A-14, Col. 2, lode gold and silver and minor metals other than mercury, ore mining, average number of wage earners, excluding shut-down periods.

COL. B, *Ibid.*, Table A-18, Col. 3, placer-mine accident statistics, average number of wage earners excluding shut-down periods.

COL. C, *Ibid.*, Table A-11, Col. 2, plus Table A-12, Col. 2, lead and zinc ore mining, average number of wage earners, eastern and western states (excluding shut-down periods).

COL. D, *Ibid.*, Table A-11, Col. 6, lead and zinc ore mining, average number of wage earners, central states (excluding shut-down periods).

COL. E, All lead and zinc wage earners. Col. C plus Col. D.

COL. F, Bureau of Mines Bulletin 461, *Metal and Nonmetal-Mine Accidents in the United States, 1942*, Table 42, Mississippi Valley lead and zinc, number of employees.

COL. G, Non-Mississippi Valley lead and zinc employment. Col. E minus Col. F.

ML-24, Worksheet 1, NOTES

( ) Estimated from output data by assuming productivity per man-year same as in 1924.

ML-25. GOLD AND SILVER: Employment/Output

	Index of gold and silver output	Employment, mine workers (1000)	Preferred series, employment/output
	A	B	C
1870	109	[a]17	.16
1871	102		
1872	91.9		
1873	97.4		
1874	93.7		
1875	89.3		
1876	107		
1877	122		
1878	134		
1879	107		
1880	100	19	.19
1881	100		
1882	99.1		
1883	93.7		
1884	97.3		
1885	101		
1886	107		
1887	106		
1888	110		
1889	114	53	.46
1890	118		
1891	122		
1892	127		
1893	130		
1894	126		
1895	146		
1896	162		
1897	165		
1898	179		
1899	192		
1900	211		
1901	207		
1902	210	[b]48	.23
1903	196		
1904	212		
1905	227		
1906	245		
1907	222		
1908	228		
1909	249	42	.17
1910	241		
1911	248		
1912	245		
1913	243		
1914	247		
1915	262		
1916	256		
1917	227		
1918	197		
1919	162	19.0	.117
1920	152	15.6	.103
1921	140	17.2	.123
1922	153	15.1	.099
1923	167	16.6	.099
1924	162	15.9	.098
1925	159	16.3	.103
1926	152	15.4	.101
1927	144	12.9	.090
1928	144	13.6	.094
1929	143	12.0	.084
1930	133	12.3	.092
1931	119	12.9	.108
1932	114	11.8	.104
1933	115	14.0	.122
1934	144	18.7	.130
1935	178	41.9	.235
1936	212	38.8	.183
1937	236	42.8	.181
1938	233	40.8	.175
1939	251	46.8	.186
1940	266	46.8	.176
1941	257	43.9	.171
1942	192	23.9	.124
1943	96.1	5.25	.055
1944	74.4	4.00	.054
1945	67.2	5.64	.084
1946	85.9	8.61	.100
1947	120	9.46	.079
1948	119	9.05	.076
1949	114	8.83	.077
1950	138	8.57	.062
1951	119	6.91	.058
1952	115	6.08	.053
1953	116	5.80	.050
1954	110	5.06	.046
1955	112	4.20	.037
1956	112	4.17	.037
1957	110	4.96	.045

ML-25, SOURCES

Col. A, Combined output series. Table MO-19, Col. A, plus Col. B multiplied by 40 (to give gold a weighting approximately proportioned to its value relative to silver in recent years).

Col. B, Employment. Table ML-24, Col. J, transcribed.

Col. C, Preferred series, employment/output. Ratio, Col. B/Col. A.

ML-25, NOTES

[a] "Probably understated," according to source. Includes all workers, not just production workers.

[b] Workers reduced to a 300-day basis.

Both employment and output include Alaskan operations. The employment figures do not include ore mills, where employment was small (cf. Table ML-24).

ML-26. NONMETALS: Employment

(thousands)

	Stone (incl. cement rock)	Sand & gravel	Clays	Gypsum	Phosphate rock	Potash	Sulfur	Fluorspar	Total misc.		All nonmetals
									Sum of Cols. D-H	Bu. of Mines	
	A	B	C	D	E	F	G	H	I	J	K
1870	15.1										
1880	39.7	[a]1		(.3)	2.5						45
1881		(1)		(.3)	(3.1)						
1882		(1)		(.3)	(3.8)						
1883		(1)		(.3)	(4.2)						
1884		(1)		(.3)	(4.6)						
1885		(1)		(.3)	(7.0)						
1886		(2)		(.3)	(4.4)						
1887		(2)		(.3)	(4.7)						
1888		(2)		(.3)	(4.3)						
1889	73	[a]2		.7	5.0		.01	.1			83
1890		(2)		(.5)	(4.5)		(.01)	(.1)			
1891		(2)		(.5)	(4.9)		(.02)	(.1)			
1892		(2)		(.6)	(5.5)		(.02)	(.1)			
1893		(2)		(.6)	(7.2)		(.01)	(.1)			
1894		(2)		(.6)	(7.2)		(.02)	(.07)			
1895		(2)		(.6)	(7.1)		(.02)	(.03)			
1896		(2)		(.5)	(6.0)		(.03)	(.05)			
1897		(2)		(.6)	(6.2)		(.04)	(.04)			
1898		(2)		(.6)	(7.3)		(.05)	(.06)			
1899		(3)		(1.0)	(7.9)		(.05)	(.1)			
1900		(3)		(1.2)	(7.2)		(.06)	(.1)			
1901		(3)		(1.2)	(6.5)		(.08)	(.1)			
1902	[b]87	[a]4	2.5	1.5	6.0		(.07)	.3			101
1903	(87)	(4)	(2.8)	(1.9)	(6.2)		(.09)	(.3)			(102)
1904	(87)	(4)	(2.6)	(1.6)	(7.2)		(.2)	(.2)			(103)
1905	(87)	(6)	(3.1)	(1.8)	(7.3)		(.3)	(.4)			(106)
1906	(88)	(7)	(3.4)	(2.6)	(7.6)		(.4)	(.2)			(109)
1907	(88)	(7)	(3.7)	(2.9)	(8.1)		(.3)	(.3)			(110)
1908	(88)	(7)	(2.9)	(2.7)	(8.3)		(.5)	(.2)			(110)
1909	[b]88	[a]9	3.6	3.5	7.9		.4	.3			113
1910	(84)	(10)	(4.2)	(3.5)	(8.8)		(.4)	(.4)			(111)
1911	79.9	(10)	(4.1)	(3.3)	(9.8)		(.3)	(.6)			108
1912	76.0	(10)	(5.0)	(3.4)	(9.3)		(.9)	(.8)			105
1913	75.4	(11)	(5.5)	(3.4)	(9.5)		(.6)	(.8)			106
1914	67.8	(11)	(4.8)	(3.0)	(8.1)		(.6)	(.7)			96
1915	69.6	(10)	(5.4)	(2.9)	(5.3)	(*)	(.7)	(1.0)			95
1916	60.9	(12)	(7.0)	(3.0)	(5.6)	(.1)	(.8)	(1.1)			90
1917	54.8	(10)	(7.8)	(2.8)	(7.0)	(.4)	(1.2)	(1.7)			86
1918	44.1	(8)	(7.8)	(2.0)	(6.6)	(.4)	(1.3)	(2.0)			72
1919	47.8	[a]9	6.3	2.2	5.8	[d].5	1.1	1.1			74
1920	53.6	(10)	(7.8)	(2.7)	7.1	(.4)	(1.2)	(1.5)			84
1921	49.3	(10)	(4.3)	(2.3)	5.5	(*)	(1.5)	(.3)			73
1922	48.5	(12)	(6.0)	(2.9)	3.8	(.1)	(1.5)	(1.1)			76
1923	57.2	(17)	(7.2)	(3.4)	3.5	(.2)	(1.7)	(.9)			91
1924	59.1	(19)	(7.2)	(3.3)	3.8	(.2)	(1.1)	(1.0)			95
1925	52.2	(20)	(7.2)	(3.5)	3.6	(.2)	(1.3)	(.9)			89
1926	50.6	(22)	(6.5)	(3.2)	3.3	(.2)	(1.7)	1.0			88
1927	49.5	(23)	(5.8)	(2.8)	3.0	(.4)	(1.9)	1.0			87
1928	46.8	(24)	(5.3)	(2.4)	3.2	(.4)	(1.9)	.9			85
1929	43.7	[c]25	5.1	2.1	3.2	[d].4	2.2	1.0	8.9		83
1930	39.1	(28)	(4.9)	(1.4)	3.3	(.4)	(2.3)	1.0			80
1931	33.2	(25)	(3.3)	(1.1)	2.7	(.4)	(1.8)	.7	(6.7)	8.9	68
1932	26.1	(20)	(2.0)	(.6)	1.9	(.3)	(.8)	.3	(3.9)	6.7	52
1933	27.7	17.5	(2.5)	(.6)	2.3	(.8)	(1.2)	.5	(5.4)	7.7	53
1934	27.3	18.6	(3.1)	(.6)	2.9	(.6)	(1.2)	.9	(6.2)	8.2	55
1935	32.6	15.8	(4.1)	(.8)	3.1	(1.2)	(1.3)	.9	(7.3)	8.3	60
1936	35.6	19.2	(5.4)	(1.1)	3.2	(1.1)	(1.6)	(1.3)	(8.3)	10.4	68
1937	36.9	19.7	(6.2)	(1.2)	3.5	(1.2)	(2.0)	(1.3)	(9.2)	10.0	72
1938	33.3	18.5	(4.1)	(1.1)	(3.3)	(1.3)	(1.7)	(.6)	(8.0)	9.5	64
1939	34.1	19.1	5.7	1.3	3.4	1.5	1.5	1.3	9.0	9.6	68
1940	33.4	21.5	(6.8)	(1.4)	(3.5)	(1.5)	(1.9)	(1.6)	(9.9)	9.8	72
1941	35.9	25.0	(9.7)	(1.8)	(3.9)	(2.0)	(2.1)	(2.2)	(12.0)	11.1	83
1942	34.0	31.9	(9.7)	(1.6)	(3.7)	(2.4)	(2.3)	(2.3)	(12.3)	12.7	88
1943	26.8	25.9	(9.0)	(1.3)	(3.9)	(2.5)	(1.8)	(2.6)	(12.1)	12.7	74
1944	21.9	22.2	(7.7)	(1.2)	(3.9)	(2.7)	(2.1)	(2.5)	(12.4)	11.3	64
1945	21.6	21.5	(7.3)	(1.1)	(4.0)	(2.7)	(2.4)	(1.9)	(12.1)	10.4	62
1946	30.6	22.2	(9.0)	(1.6)	(4.4)	(2.7)	(2.4)	(1.6)	(12.7)	11.3	74
1947	31.8	25.1	(9.1)	(1.6)	(5.5)	(2.9)	(2.7)	(1.8)	(14.5)	12.2	80
1948	33.2	25.5	(9.6)	(1.8)	(5.0)	(2.9)	(2.9)	(1.8)	(14.4)	11.9	83
1949	36.0	26.6	(7.9)	(1.5)	(4.8)	(2.7)	(2.7)	(1.2)	(12.9)	12.1	83
1950	38.3	26.5	(8.5)	(1.7)	(5.1)	(2.9)	(3.0)	(1.5)	(14.2)	12.0	87
1951	37.3	27.0	(9.2)	(1.7)	(5.1)	(2.9)	(3.0)	(1.6)	(14.3)	12.5	88
1952	36.6	27.7	(8.3)	(1.5)	(4.8)	(3.0)	(3.0)	(1.5)	(13.8)	12.4	86
1953	38.0	27.4	(7.8)	(1.3)	(4.9)	(3.0)	(3.0)	(1.4)	(13.6)	12.8	87
1954	34.9	34.7	6.8	[d]1.3	4.6	[a]3.0	3.1	1.0	13.0	12.8	89
1955	33.6	35.8	(7.9)	(1.4)	(4.2)	(2.8)	(3.2)	(1.1)		14.5	90
1956	35.6	37.5	(7.9)	(1.1)	(4.0)	(2.6)	(3.5)	(1.2)		15.6	93
1957	37.6	39.0	(6.3)	(.9)	(3.5)	(2.2)	(3.1)	(1.1)		17.9	94

ML-26, SOURCES

COL. A, Stone
1870-1909. Table ML-28, Col. S, plus estimate for cement rock.
1911-57. Table ML-28, Col. T, transcribed.
COL. B, Sand and gravel. Table ML-31, Col. C (1880-1928 are crude extrapolations, based on output (Table MO-26) and extrapolation of the irregular trend in employment/output ratio, 1929-57 (Table ML-31)).
COL. C, Clays. Table ML-32, Col. F; interpolated by output in tons (Table MO-27, Col. G) and interpolated ratios of employment to output in tons.
COL. D, Gypsum. *1954 Census of Mineral Industries*, p. 14J-4, "Gypsum operations: Production and development workers."
COL. E, Phosphate rock. Table ML-33, Col. C.
COL. F, Potash
1919-29. Estimated from output (Table MO-30) by rough extrapolation of decline in employment/output between 1939 and 1954.
1939. *1939 Census of Mineral Industries*, Vol. I, p. 842, "Wage earners."
1954. Estimated by assuming that employment of production workers in potash, soda, and borate minerals (*1954 Census*, p. 14H-5, gives 4,738 persons)was divided in proportion to value of product (*ibid.*, p. 14H-24, plus *Min. Yearbook 1955*, Vol. I, pp. 243, 911, 1039, and 1041): 63% in potash: .63 times 4,738 = 3.0 thousand.
COL. G, Sulfur. Table ML-34, Col. A.
COL. H, Fluorspar. Table ML-35, Col. D.
COL. I, Miscellaneous nonmetals. Sum of Cols. D through H.
COL. J, Miscellaneous nonmetals total, Bureau of Mines. *Min. Yearbook 1958*, Vol. I, p. 121. This includes mines producing asbestos, asphalt, barite, feldspar, mica, gypsum, magnesite, phosphate rock, potash, salt, sulfur, talc, soapstone, etc. Fluorspar included after 1941. Clays included after 1954.
COL. K, Total nonmetals, employment. Sum, Cols. A through H. Rough estimates added for clays in 1880 and 1889.

ML-26, NOTES

( ) Interpolation or extrapolation.
* Less than .05.
[a] Rough extrapolation (see sources notes).
[b] Including an estimate for cement rock, based on output (Table MO-24) and employment in 1911 (Table ML-28).
[c] Estimated by multiplying employment/output estimate (Table ML-31) by tons produced (Table MO-26).
[d] Employment at mines multiplied by 3.2, the ratio of man-hours at all gypsum operations to man-hours in operations classified in mining.

Where not otherwise indicated, the interpolated figures were derived by straight-line interpolation of employment/output ratios for each mineral, and multiplication of these interpolated ratios by the output for each year.

COL. K. This sum is not quite all-inclusive, as the comparison of Cols. I and J indicates. It is, however, exactly comparable with the nonmetals output total, for computation of employment/output ratios.

ML-27. NONMETALS: Employment/Output

ML-27, SOURCES

COL. A, Employment. Table ML-26, Col. K, transcribed.
COL. B, Output. Table MO-20, Col. M, transcribed.
COL. C, Preferred series, employment/output. Ratio, Col. A/Col. B.

ML-27, NOTES

( ) Interpolation or extrapolation.

For an alternative measure of the trend of employment/output in nonmetals, see Table ML-3, Col. N.

	Employment (1000)	Output ($ mil. 1954 prices)	Preferred series, employment/output Col. A / Col. B
	A	B	C
1880	45	(112)	402
1889	83	299	278
1902	101	319	317
1906	(109)	387	282
1907	(110)	388	283
1908	(110)	384	286
1909	113	434	260
1910	(111)	462	246
1911	108	461	234
1912	105	487	216
1913	106	505	210
1914	96	479	200
1915	95	462	206
1916	90	521	173
1917	86	482	178
1918	72	401	180
1919	74	415	178
1920	84	481	175
1921	73	426	171
1922	76	518	147
1923	91	648	140
1924	95	651	146
1925	89	714	125
1926	88	740	119
1927	87	789	110
1928	85	796	107
1929	83	833	100
1930	80	747	107
1931	68	565	120
1932	52	380	137
1933	53	368	144
1934	55	414	133
1935	60	434	138
1936	68	598	114
1937	72	640	112
1938	64	569	112
1939	68	653	104
1940	72	701	103
1941	83	860	97
1942	88	935	94
1943	74	803	92
1944	64	761	84
1945	62	782	79
1946	74	919	81
1947	80	1041	77
1948	83	1128	74
1949	83	1100	75
1950	87	1239	70
1951	88	1365	64
1952	86	1403	61
1953	87	1447	60
1954	89	1582	56
1955	90	1729	52
1956	93	1862	50
1957	94	1884	50

ML-28. STONE: Employment in Quarries[a] (Excluding Processing Plants)

	Limestone			Granite				Sandstone		
	Dim.	Cr.[b]	Total[b]	Dim.	Cr.	Total	Basalt (cr.)	Dim.	Cr.	Total
	A	B	C	D	E	F	G	H	I	J
1870										
1880			[c]13.				11.5			9.6
1889	[d]12	[d]13	[d]24	[d]19	[d]2		21.3	[d]14	[d]3	17.5
1902			[e]35				[e]24			[e]14
1909			[f]36			18.7	5.3			10.0
1911			40.7			13.2	4.8			8.6
1912			41.0			12.1	4.8			7.2
1913			39.1			11.6	6.6			7.0
1914			32.8			11.0	5.6			7.5
1915			34.5			12.3	5.1			6.2
1916			32.0			9.9	4.3			4.6
1917			29.1			9.9	3.6			3.1
1918			26.3			5.5	2.6			3.6
1919			27.2			7.4	3.5			2.7
1920			29.2			9.4	3.4			3.5
1921			26.9			7.1	3.9			3.1
1922	3.4	23.3	26.7	3.9	2.5	6.3	3.7	1.8	1.4	3.1
1923	3.3	27.7	31.0	5.9	2.4	8.4	4.4	1.9	1.8	3.7
1924	4.4	27.5	32.0	6.7	2.2	8.8	4.2	2.5	1.8	4.3
1925	3.1	24.2	27.4	5.3	3.0	8.2	3.0	2.3	1.5	3.8
1926	2.7	23.9	26.5	4.7	2.0	6.7	3.1	2.1	1.8	3.9
1927	2.5	24.5	27.0	4.8	2.2	6.9	2.9	1.5	1.3	2.8
1928	2.3	23.1	25.3	4.9	2.1	6.9	2.8	1.5	1.1	2.6
1929	2.6	21.1	23.7	4.5	1.8	6.3	2.6	1.3	1.3	2.6
1930	2.5	18.8	21.3	4.2	1.4	5.6	2.3	1.3	1.1	2.4
1931	1.6	16.4	18.0	3.4	1.3	4.7	2.1	.8	.9	1.7
1932	.9	13.3	14.2	2.6	.9	3.5	2.0	.6	.6	1.2
1933	.9	13.7	14.6	2.5	1.6	4.2	1.9	.4	.8	1.2
1934	.5	14.1	14.6	2.8	1.7	4.5	1.8	.4	.8	1.2
1935	.5	18.7	19.2	2.6	1.4	4.0	2.1	.5	1.3	1.8
1936	1.0	19.6	20.5	3.0	1.8	4.8	2.0	.6	1.5	2.1
1937	1.1	19.6	20.8	3.3	1.9	5.2	1.8	.6	1.6	2.2
1938	.9	17.1	18.1	3.0	2.0	4.9	2.1	.7	1.4	2.0
1939	1.0	17.8	18.8	2.7	2.2	4.9	1.8	.7	1.5	2.2
1940	1.0	18.3	19.3	2.3	1.6	4.0	1.9	.3	1.8	2.1
1941	.8	20.5	21.3	2.2	2.2	4.5	1.9	.5	1.7	2.2
1942	.5	20.5	21.0	1.6	2.1	3.7	1.8	.5	1.4	1.9
1943	.1	17.0	17.2	1.2	1.3	2.5	1.2	.3	1.3	1.6
1944			13.9			2.1	1.1			1.3
1945			13.2			2.1	1.2			1.5
1946	.6	18.2	18.9	1.5	1.3	2.8	1.7	.5	1.5	2.1
1947	.5	18.4	18.9	1.6	1.4	3.1	1.7	.5	1.7	2.2
1948	.6	19.1	19.6	1.9	1.5	3.4	1.8	.4	2.0	2.4
1949	.9	20.5	21.4	1.8	2.4	4.2	1.9	.4	2.2	2.5
1950			22.9			4.4	2.1			2.6
1951	1.2	21.3	22.6	1.8	2.2	4.0	1.9	.8	1.7	2.5
1952	1.0	21.6	22.6	1.5	2.2	3.7	2.1	.9	1.5	2.3
1953	.9	22.7	23.6	1.5	2.2	3.7	2.1	.8	1.8	2.6
1954	1.0	20.4	21.4	1.5	2.0	3.5	2.1	.9	1.3	2.2
1955	1.0	19.5	20.5	1.2	2.3	3.5	1.9	.6	1.3	2.0
1956	.9	21.4	22.3	1.4	2.0	3.4	2.2	1.1	1.1	2.1
1957	1.3	22.2	23.5	1.3	2.9	4.3	1.8	.8	1.1	1.9

(thousands)

	Marble (dim.)	Slate			Lime rock[b]	Cement rock	Total			
		Dim.	Cr.	Total			Dim.	Cr.[b]	Dim. plus cr.[b]	Dim. plus cr. plus cement
	K	L	M	N	O	P	Q	R	S	T
1870	.80			1.7					15.1	
1880	[c]2.6			3.0					39.7	
1889	4.3			5.9					[d]73	
1902	[e]4.5			[e]7.6					[e]85	
1909	6.2			8.9					[f]85	
1911	2.4			4.4		5.7			74.2	79.9
1912	3.0			4.1		3.8			72.2	76.0
1913	2.7			3.8		4.6			70.8	75.4
1914	2.6			4.1		4.3			63.5	67.8
1915	2.61			4.47		4.4			65.2	69.6
1916	2.26			3.82		4.2			56.7	60.9
1917	1.66			3.43		3.9			50.9	54.8
1918	1.02			2.02		3.0			41.1	44.1
1919	1.24			2.32		3.4			44.4	47.8
1920	1.64			2.60		4.0			49.6	53.6
1921	2.14			2.70		3.4			45.9	49.3
1922	2.27	2.84		2.84		3.6	14.2	30.9	44.9	48.5
1923	2.54	3.23		3.23		4.0	16.8	36.3	53.2	57.2
1924	2.49	3.16		3.16		4.2	19.3	35.7	54.9	59.1
1925	2.33	2.77	.06	2.83		4.5	15.8	31.8	47.7	52.2
1926	2.36	3.19		3.20		4.8	15.1	30.8	45.8	50.6
1927	2.88	2.45	.04	2.49		4.6	14.1	30.9	44.9	49.5
1928	2.76	2.22	.01	2.23		4.2	13.7	29.1	42.6	46.8
1929	2.63	2.12		2.12		3.8	13.1	26.8	39.9	43.7
1930	2.35	1.58	.01	1.59		3.6	11.9	23.6	35.5	39.1
1931	1.76	1.26	.01	1.27		3.6	8.9	20.7	29.6	33.2
1932	1.28	.80	.01	.81		3.2	6.2	16.8	22.9	26.1
1933	1.25	.81	.02	.83		3.8	5.9	18.0	23.9	27.7
1934	.66	.52	.06	.59		3.9	4.9	18.5	23.4	27.3
1935	.83	.62	.18	.80	3.3	3.9	5.0	23.7	28.7	32.6
1936	.93	.75	.16	.91	3.8	4.4	6.1	25.1	31.2	35.6
1937	1.29	1.04	.18	1.22	4.2	4.3	7.3	25.2	32.6	36.9
1938	1.30	.92	.12	1.04	3.7	3.9	6.8	22.7	29.4	33.3
1939	1.39	1.02	.12	1.14	3.8	3.8	6.8	23.4	30.3	34.1
1940	1.16	.94	.17	1.11	4.0	3.8	5.7	23.8	29.6	33.4
1941	.83	.96	.17	1.12	4.4	4.1	5.3	26.5	31.8	35.9
1942	.63	.71	.17	.89	4.1	4.2	3.9	26.0	29.8	34.0
1943	.34	.27	.12	.40	3.5	3.6	2.2	20.9	23.2	26.8
1944	.38			.31	2.8	2.8			19.1	21.9
1945	.47			.29	2.6	2.9			18.7	21.6
1946	.67	.22	.33	.55	3.0	4.0	3.5	23.0	26.6	30.6
1947	.85	.60	.21	.81	3.3	4.2	4.1	23.4	27.6	31.8
1948	.99	.71	.24	.95	3.2	4.0	4.6	24.6	29.2	33.2
1949	1.09	.59	.31	.90	3.0	4.1	4.8	27.3	31.9	36.0
1950	1.05			1.10	2.8	4.1			34.2	38.3
1951	.98	.81	.28	1.08	3.0	4.3	5.6	27.4	33.0	37.3
1952	.93	.62	.20	.82	3.0	4.2	4.9	27.6	32.4	36.6
1953	.91	.67	.15	.82	3.0	4.2	4.8	28.9	33.8	38.0
1954	.92	.55	.20	.75	2.6	4.0	4.8	26.0	30.9	34.9
1955	.83	.62	.11	.72	2.7	4.1	4.3	25.1	29.5	33.6
1956	.99	.50	.10	.60	2.8	3.9	4.9	26.7	31.7	35.6
1957	1.01	.50	.18	.69	2.6	3.9	4.9	[g]28.8	[g]33.7	[g]37.6

(Sources and Notes on next page)

ML-28. STONE: Employment in Quarries[a] (Excluding Processing Plants) (Continued)

ML-28, SOURCES

For all columns, except as noted below:

1870-1909. *Census of Mineral Industries* for the various years (summarized in *1954 Census of Mineral Industries*, sec. 14B, Table 1A).

1911-57. Bureau of Mines, *Quarry Accidents in the United States* for 1911-1942 (separate pamphlets) and *Injury Experience in the Quarrying Industry*, 1952-1957 (separate booklets), plus some unpublished worksheets of the Bureau of Mines to supply data omitted from the 1942-51 historical tables of the 1952 booklet. The missing data for 1944-45 and 1950 have been lost.

Totals are adjusted from both sources to reflect the adjustments made in the columns which precede them.

The employment reported under "all other and not stated" was allocated between dimension and nondimension stone in roughly the same proportions as the employment reported as in "Dimension stone" and "Nondimension stone" respectively. More complex allocations, such as that used by Barger & Schurr (p. 331), are about as dubious as that used here, and lead to many inconsistencies.

ML-28, NOTES

Dim. means dimension stone.

Cr. means crushed and broken or nondimension stone.

[a] Employment in noncommercial (principally government) quarries was not included in any of the figures until 1949. Noncommercial quarry employment data are available only for the years listed below. These figures might be added to those given in Cols. R, S, and T, to make them consistent with the data for years after 1948 and to make them consistent with the output data, which include noncommercial output in all years (for output of noncommercial quarries, see Table MO-22 notes). There are no data, however, for making the data before 1936 consistent with those after 1948; nor are data available reporting noncommercial employment by kind of stone.

Noncommercial quarries: Employment in quarries, excluding processing plants (in thousands of men)

1936	8.29	1940	9.30	1944	2.00
1937	7.26	1941	8.85	1945	n.a.
1938	10.32	1942	6.12	1946	n.a.
1939	10.22	1943	n.a.	1947	2.37
				1948	2.67

n.a. Not available.
Source: U. S. Bureau of Mines, Branch of Accident Analysis.

[b] Lime rock (limestone quarried for burning into lime) is included with crushed and broken limestone in all years, including 1935-57, when it is also shown separately in Col. O but not double counted in Cols. R, S and T. See also footnote a.

[c] Rough estimates used to separate marble and limestone employment; based on data of employment by states, with 1870 and 1889 data indicating that most of the employment in Vermont, Tennessee, and Maryland was in marble rather than limestone and that about a fourth of the employment in New York was in marble.

[d] Rough estimates, based on the output-by-state data of Table MO-23, plus multiple correlations of man-days on outputs of dimension and nondimension stone (and lime), which were used to test the output estimates (see worksheets attached to Table MO-23) and to estimate the distribution of employment, by state, as between dimension and nondimension stone production.

In addition, an estimate of 5,000 men employed in burning of stone into lime was deducted from the figures for employment in crushed limestone, and from all the totals deriving therefrom. This estimate was based on the reported quantity of lime burned by quarry establishments, plus the estimate of employment from the multiple correlation noted above, plus ratios of quarry to quarry-plus-works employment, from the *Quarry Accidents* Bulletin for 1935-1957.

[e] Adjusted to represent approximately a normal work-year of 270 days in marble and 235 days in all other quarries, in contrast with the Census, which reduced reported employments to a 300-day basis for establishments which reported a shorter work-year. Our inflation factors were based on data in *Quarry Accidents* Bulletins reporting average number of days of operation for 1911-19 (quarries were given separately from works only for 1915 and later years).

In addition, we have subtracted an estimate of 5,000 workers engaged in burning limestone into lime. (Based on *1904 Census of Manufactures* data for employment in production of lime; employment extrapolated from 1904 to 1902 on basis of value of lime produced; ratio of quarry to kiln employment based on *Quarry Accidents* data for 1935-57. *1904 Census* as reported in *1939 Census*, Vol. II, Part 2, p. 143.)

[f] Includes an estimate of 6,000 men employed in quarrying rock for burning into lime, based on *1909 Census of Manufactures* (*1939 Census, loc. cit.*), plus ratios of quarry to kiln employment as explained in note e, above.

[g] Includes employment of .5 in miscellaneous stone.

Extending the Bureau of Mines data with adjusted Census data presents more difficulty in the case of quarries than is true of any other mineral. The usual problem of the method of averaging is particularly acute in the case of quarries, because of the considerable effect of weather, which may make the Census average for the year quite different from that of Mines. Complete coverage is difficult, because of the large number of small quarries and the question of what to do about noncommercial (principally government) quarries and "captive" quarries which produce stone (chiefly limestone) for factories producing lime, cement, plasterboard, chemicals, etc. The Bureau of Mines attempts to cover the "captive" mines, while Census omits them, including such quarries with manufactures—though before 1909 it included both lime kilns and their quarries.

In addition, there are very large problems connected with separating the manufacturing activities from those of extracting the stone. In the case of crushed and broken stone, these activities consist of crushing, sifting and sizing, and washing the stone; and where lime or cement is made, there may be considerable problems of separating employees according to their dominant activity. The Mines data which we use theoretically omit all such processing activities, while Census data presumably include them all for quarries at such establishments as are included in the mining rather than manufacturing category.

In the case of dimension stone, the problem is much more acute, because the very extraction of the stone is to a degree a fabrication process. Much care must be exercised to prevent breakage or incipient cracking, and the needed sizes and shapes must be extracted. In addition, the fabrication and finishing is often done at the same establishment, so that the practical difficulties of separating labor input are considerable, and our data no doubt represent considerable inconsistency in dealing with these problems from one decade to another and one quarry or kind of stone to another, and as between the two data collecting agencies.

It is clear that, from the standpoint of employment/output, the most significant division among quarries is between those which extract dimension stone and those which extract broken and crushed stone. Unfortunately, however, the two were not separated by the Bureau of Mines until 1922, and Census did no adequate job of this sort until 1939. However, we have

made an intensive analysis of the considerable data offered by the *1890 Census* for the year 1889, and we believe this affords a usable guidepost to the extrapolation of the 1922-57 data of the Bureau of Mines.

While it is evident from the above discussion that the Bureau of Mines includes many quarries omitted from the Census of Mining, and that Census no doubt includes processing activities which Mines omits from its data on quarries (omitting "works"), these countervailing inconsistencies seem to be in approximate balance, as indicated by Worksheet 1, below.

A more complete examination of the differences, and an attempt to reconcile the two sets of reports, is made in Tables A to I, following, which cover all the years in which both Bureaus made reports on quarry employment, and in the following discussion:

1919: The comparison for 1919 is limited by the lack of separation between dimension and nondimension stone, and Census' failure to segregate data on quarries proper from data on the associated processing plants.[1]

The data given by the Bureau of Mines are higher than those by Census for all stones but sandstone and slate, with an overall excess of 25%, as shown by the index numbers

(Continued on next page)

[1] The *1920 Census*, Vol. XI, p. 388, indicates that employment in breaking of stone into rubble and riprap and crushing for road work, etc., was generally included when the work was done in association with the quarry proper, and that employment in sawing, finishing, polishing, etc. was included except when the process was considered "manufacturing," when an attempt (not often successful) was made to separate the manufacturing operation from the quarrying.

ML-28, WORKSHEET 1. STONE: Employment in Quarries (Excluding Cement Rock): Bureau of Mines vs. Census

(1000 production workers)

	Limestone		Granite		Basalt		Sandstone		Marble		Slate		Total	
	B.M.	Census	B.M.	Census	B.M.	Census	B.M.	Census	B.M.	Census	B.M.	Census	B.M.	Census
	A		B		C		D		E		F		G	
Section A. Figures given in sources														
1870										.8		1.7		15.1
1880		[a]15.6		[b]11.5				9.6				3.0		39.7
1889		[c]28.7		[b]21.3				17.5		4.3		5.9		[c]77.7
1902		[c]31.5		[b]18.8				10.8		4.1		5.9		[c]71.2
1909		30.3		18.7		5.3		10.0		6.2		8.9		79.4
1911	[d]40.7		13.2		4.8		8.6		2.4		4.4		[d]74.1	
1919	[d]27.2	22.1	7.4	8.0	3.5	3.3	2.7	4.5	1.2	1.7	2.3	3.5	[d]44.4	43.2
1929	[d]23.7	22.3	6.3	10.0	2.6	3.1	2.6	3.6	2.6	3.3	2.1	4.1	[d]39.9	[e]48.2
1939	[d]18.8	18.8	4.9	4.4	1.8	1.9	2.2	1.7	1.4	1.4	1.1	1.3	[d]30.3	[f]30.5
1954	[d]21.4	27.6	3.5	6.0	2.1	2.7	2.2	3.3	.9	2.1	.7	1.7	[d]30.9	[g]44.5
Section B. Adjusted for Census–Mines comparison														
1870										.8		1.7		15.1
1880		13.0		[b]11.5				9.6		2.6		3.0		39.7
1889		[d]24		[b]21.3				17.5		4.3		5.9		[d]73
1902		[d]35		[b]24				14		4.5		7.6		[d]85
1909		[d]36		18.7		5.3		10.0		6.2		8.9		[d]85
1911	[d]40.7		13.2		4.8		8.6		2.4		4.4		[d]74.1	
1919[h]	22.2	22.1	7.4	8.0	3.5	3.3	2.7	4.3	1.2	1.7	2.3	3.5	39.4	43.2
1929[h]	[d]23.7	[d]26.7	6.3	8.1	2.6	3.1	2.6	3.5	2.6	3.0	2.1	2.8	[d]39.9	[d,e]49.0
1939[h]	[d]22.1	[d]18.8	5.1	4.3	1.8	1.9	2.2	1.7	1.4	1.6	1.1	1.4	[d]33.8	[d,f]30.4
1954[i]	18.9	25.4	3.5	3.3	2.1	2.8	2.2	2.5	.9	1.0	.7	[j].5	28.3	[g]36.2

SOURCES
Sec. A. *1954 Census of Mineral Industries*, sec. 14B, Table 1A; Bureau of Mines, *Quarry Accidents in the U.S.*, and successor publication, various years.
Sec. B. Tables A, C, E, and H, below, and Table ML-28.

[a] Includes marble.
[b] Includes basalt.
[c] Includes limekilns and associated quarries.
[d] Includes quarries associated with limekilns.
[e] Includes 1.84 stone n.e.c.
[f] Includes .86 stone n.e.c.
[g] Includes 1.05 stone n.e.c.
[h] The Census figures include associated crushing plants.
[i] The Census figures include associated processing (crushing, etc.) plants and exclude quarries associated with dressing plants. They do not include lime or cement plants. If an adjustment were made to exclude an estimate of employment at processing plants, and to include an estimate for stone quarries associated with dressing plants, based on man-hours at each (*1954 Census*, pp. 14C-4 and 14D-4), the Census total stone employment would be about 25,000, instead of the 36,200 shown above.
[j] Estimate obtained by applying ratio of man-hours in quarries to total man-hours, to number of production and development workers.

ML-28, Worksheet 1. (continued)

in Table A, Col. 4. It appears that Census had serious undercoverage, but the methods of computing "average employment" were so different as to yield much of the difference. (Census computations include periods of shutdown, or zero employment, in the averages, while Bureau of Mines gives average employment for active periods only.) The method of averaging could probably cause only a 10% to 20% difference, however;[2] some of the difference in employment is probably due to: (1) greater inclusion of quarries associated with processing works by Mines, and (2) differences in classification of stones by kind, which may account for the "quarries only" figure of Mines being higher on some kinds of stone.

1929: The 1929 comparison is a little more complete, as Mines has complete separation of dimension and nondimension stone and Census has crushed and broken stone given separately from all stone, though dimension stone figures are not given. As indicated by the ratios in Table B, the data appear to be more comparable for 1929 than for 1919; and Mines is this time lower than Census, not higher, though Mines data for nondimension stone are higher.

Several special adjustments were required in both Mines and Census data to make them comparable with each other, as will be noted in the footnotes to Table C. The principal difficulties involve the separation of quarries into dimension and nondimension and the exclusion of dimension stone dressing plants.

Is there evidence that the Bureau of Mines figures for 1929 are seriously affected by underreporting, as charged in Barger & Schurr?[3] As a guide, let us check the comparisons for 1939 and 1954. Barger & Schurr concluded that in 1939 Mines had almost complete coverage; and in 1954 there was considerable care and cooperation between the two Bureaus to avoid undercoverage or discrepancies. The most comparable figures for 1939 are for employment for crushed stone and for total stone, as given in Cols. 7 and 11 of Table D. The line for all kinds of stone except that used for cement and lime indicates that the Mines figures ran 21% higher for crushed stone, and 18% higher for all stone.[4] Table G shows Bureau of Mines' 1954 employment figures at about 97% of Census', for both crushed and total stone—quarries and works taken together, which is the only good comparable figure. The man-hour figure reported by Mines runs about 87% of Census', however, an indication of undercoverage by Mines, which in turn indicates that Mines' employment figure may run 11% (= 97/87) higher because of the difference in the methods of averaging.

We are left uncertain of the degree to which Mines may have lacked coverage in 1929. If we assume, however, that Census coverage was virtually complete, as indicated by comparison with the Geological Survey report on output,[5]

[2] The Mines report (*Quarry Accidents in the United States,* 1919, p. 13) gives 253 average active days for all quarries and works. A six day week, with continuous operation for 52 weeks, would give a 312 day work-year. If the entire difference between 312 and 253 were due to shutdowns, counted by Census but not by Mines, the ratio of the two employment figures would be 1.23, not 1.50. And since much of the difference between 312 and 253 was no doubt due to operating less than 6 days per week rather than to shutdown, the ratio 1.23 is an overestimate of the difference which could be due to the differences in methods of averaging.

[3] Barger & Schurr, pp. 337-39 and 386-91. Their estimates of underreporting are based on the WPA-NRP study, *Crushed-Stone Industry,* by H. S. Kantor and G. A. Saeger; by matching returns of output and of employment (collected separately by the Bureau of Mines) the authors were able to study productivity of a few large companies for the period 1915-37 and a larger number of companies for 1929-36. The resultant productivity estimates, when combined with reports on aggregate national output, pointed to employment figures for crushed stone about 100% higher than given in the Bureau of Mines report.

[4] Probably due in considerable part to Mines' method of averaging, showing an average for active periods only. 1939 was a time of considerable depression, which would tend to make "active period" averages considerably higher than full year averages. However, Mines and Census are fairly similar in that both show 1939 employment levels around 30% higher than 1929.

[5] 1929 output data (in million tons):

	Geological Survey	*Census*
Rock used for lime:		
Quicklime	[a]5.1	[b]8.9
Hydrated lime	[a]2.2	
Rock used for cement	[c]43.3	[d]42.1
Other rock quarried by lime, cement, and other mfrs.	[f]99.0	[e]15.4
Other limestone, crushed and broken		[g]75.6
Noncommercial output of crushed stone	[h]7.3	[i]11.7
Net estimate of commercial crushed limestone	[j]91.7	[j]91.0
Total stone	[k]191.7	[m]205.1
Total stone excluding cement and lime rock	141.1	154.1
Total commercial stone	184.4	193.4
Total commercial stone excluding cement and lime	133.8	142.4
Total commercial stone, crushed, excluding cement and lime	[n]129.1	[p]122.4

[a] Estimated from lime "available for consumption" (*Min. Resources 1929,* Part II, p. 278), on basis of: 3,750 lb. of limestone = 2,000 lb. of C_aO (quicklime); 56 lb. of C_aO plus 18 lb. water = 74 lb. $C_a(OH)_2$ (hydrated lime).

[b] Stone used for lime, *1930 Census,* stone chapter, Tables 27 and 4, Mines & Quarries.

[c] *Min. Resources 1929,* Part II, p. 407.

[d] Stone used for cement, *1930 Census,* stone chapter, Tables 26 and 4.

[e] Presumably mostly limestone; *ibid.,* Tables 26, 27 and 4.

[f] *Min. Resources 1929,* Part II, p. 249. Presumably includes noncommercial (government) output.

[g] *1930 Census,* stone chapter, Table 28. Does not include noncommercial output.

[h] *Min. Yearbook 1934,* Statistical Appendix, p. 61.

[i] *1930 Census,* stone chapter, Table 4.

[j] By appropriate addition of above 3 lines. It will be seen from note e above that the Census total probably includes some stone other than limestone. It can also be seen that the total for commercial and noncommercial is larger for Census than for Mines, or 102.7 vs. 99.0 million tons. There is no separation of limestone from other stone for noncommercial quarries, so that for both Mines and Census we are making some error in treating it all as limestone.

[k] *Min. Resources 1929,* Part II, p. 230; plus lime and cement rock, lines 1-3 of this table.

[m] *1930 Census,* stone chapter:

Table 10, Summary for the U.S.	122.9
Table 4: noncommercial	11.7
"enterprises . . . in lime . . . cement . . . other limestone"	8.7
sandstone and other stone classified in mfg. industries	4.1
Table 26, Limestone and cement rock prod. by cement mfrs.	40.3
Table 27, Limestone produced by lime mfrs.	17.4
Total	205.1

[n] Same as preceding line, minus the following (*Min. Resources 1929,* Part II, p. 230) (in mil. tons):

Building stone	2.65
Monumental stone	.37
Paving blocks	.30
Curbing	.34
Flagging	.09
Rubble	.91
Total	4.66

[p] *1930 Census,* stone chapter (in thous. tons):

Table 28, Summary . . . crushed stone	102,960
Table 26, Quarrying by cement mfrs., not used for cement	2,779
Table 27, Quarrying by lime mfrs., not used for lime	8,967
Table 4: Limestone produced by mfrs. not used for lime or cement	3,633
Sandstone etc. produced by mfg. and mining industries	2,814 + 1,284
	122,437

we might estimate that Mines' figure on total employment was 25% low. This is arrived at by the following reasoning:

Census excess over Mines in 1954 (man-hours figure)	15%
Excess of Mines over Census in year of "complete" coverage (1939 employment figure)	21%
Excess of Census over Mines, all stone, 1929 (100/94: See Table B below)	6%

If we add, to the 21% "expected" excess of Mines over Census due to the method of averaging, the 6% *deficiency* shown by Mines as against Census in 1929, we get an estimate of about 30% by which the Mines figure should be raised to get complete coverage. Considerable doubt is cast on this conclusion by the fact that Mines shows a 10% excess over Census for the crushed and broken stone, which is about the expected difference due to methods of averaging. The less "acceptable" difference then falls in the figures (implicit, not given explicitly by Census) for dimension stone. This difference may well be due to failure of Census to avoid counting employment in stone dressing works connected with dimension stone quarries; though we have made an *attempt* to remove employment in processing works, erroneously included by Census (see footnote a to Table C).

The conclusion as to underreporting by Mines thus is not firm. We do, however, believe the adjustment made by Barger & Schurr, in nondimension stone, is discredited by this comparison with Census.

1939: The 1939 comparison is considerably more complete, as both Bureaus reported dimension and nondimension stone separately and gave man-hours figures, which enable us to surmount the problem of the different methods of averaging the numbers employed.

It is noteworthy that the man-hour figures are within 1% to 3% of each other, and that the Mines figures are slightly higher than the Census. The figures on numbers of men employed are, however, higher for Mines than Census in all cases except that of dimension marble quarries, running from 2% for dimension slate to 287% for nondimension marble (a very small industry, with serious classification problems). For dimension and nondimension stone together, the Mines excesses run from 2% to 53%, averaging 17% as against 1% for man-hours. For 1939, at least, 16% (17%-1%) would seem to measure the difference between the Census and Mines methods of averaging the number of employees over the year.

1954: 1954 data are even more complete, but also unfortunately complicated by the Census omission of separate employment figures for dimension stone quarries associated with dressing plants.

The indications (Table G) are that Census secured more complete coverage by 15% (100/87 = 115), for all rock excluding lime and cement rock (using man-hours as the criterion). The coverage of Mines in dimension stone appears to be almost as large as that of Census, but the man-hours in crushed stone were 16% less than those of Census. There is considerable doubt as to whether these differences are just adequacy of coverage, however, when we note that the "Quarries only" man-hours figure of Mines was 7% larger than the Census figure, and 9% larger if we include quarries in lime and cement works in the comparison. It seems probable that the most comparable column as between Mines and Census is that for quarries only, in crushed and broken stone, and in this category Mines gives the larger figure.

Mines' appearance of undercoverage may arise from a more exclusive definition of "outside works" associated with quarries, as compared to the definition used by Census. There are no doubt other differences, as in classification of rocks by kind and in classification of quarries according to whether their chief product was dimension or nondimension stone, which make for considerable variance in the ratios in Col. 6 of Table G and which make firm quantitative conclusions impossible.

Table A. Census vs. Bureau of Mines, 1919: Employment (Wage Earners) at "Quarries"

	Bureau of Mines		Census:	Ratio,
	Quarries only	Quarries plus associated crushing and dressing plants	quarries (plus associated crushing plants, plus some dressing plants)	Col. 2/ Col. 3 (Census = 100)
	(1)	(2)	(3)	(4)
Granite	7380	10466	8049	130
Limestone	[a] 22248	28449	22069	129
Cement rock	3413	([b] 3413)	([c] 3413)	
Marble	1238	4006	1732	231
Sandstone	2667	3630	4287	85
Slate	2316	3373	3513	96
Trap rock	3540	4730	3336	142
Total	[a] 42800	[a] 58067	46399	125

[a] Employment at limekilns and quarries of 11405 (*1939 Census of Manufactures,* Vol. II, Part 2, p. 143) has been subtracted from Col. 2; employment at lime producing quarries alone has been estimated at 5000 (based on 1935, 1937, and 1939 ratios of employment at such quarries as reported by the Bureau of Mines, and total lime employment as reported by Census), and subtracted from Col. 1, for comparability with Census (Col. 2). The totals have been adjusted similarly (with rounding, because of the approximation, in Col. 1).

[b] Quarries only.

[c] Bureau of Mines figure, quarries only.

Table B. Census vs. Bureau of Mines, 1929

(Index numbers of employment at quarries and works in 1929, as reported by the Bureau of Mines, with Census report taken as = 100)

	Crushed and broken stone	All stone
	(1)	(2)
Granite	86	82
Limestone	130	112
Cement rock (quarries only)	64	64
Marble	397	95
Sandstone	162	82
Slate	1.4	78
Trap rock	116	116
Other	n.a.	n.a.
Total	110	94

Computed from Table C.

ML-28, Worksheet 1. NOTES (continued)

Table C. Census vs. Bureau of Mines, 1929: Employment at Quarries

(numbers of production workers)

	Crushed and broken stone			All stone		
	Bureau of Mines		Census:	Bureau of Mines		Census:
	Quarries only	Quarries plus works	quarries plus works	Quarries only	Quarries plus crushing plants	quarries plus crushing plants
	(1)	(2)	(3)	(4)	(5)	(6)
Granite	1411	1781	2066	6293	6663	[a] 8100
Limestone	[b] 21389	[c] 27600	[d] 21190	23693	[c] 30000	[d] 26700
Cement rock	3817	([e] 3817)	[f] 6000	3817	([e] 3817)	[f] 6000
Marble	[b] 260	[b] 488	123	2631	2859	[a] 3000
Sandstone	1231	1494	921	2592	2855	[g] 3500
Slate	3	3	214	2116	2116	[a] 2760
Trap rock	[b] 2346	[b] 3327	2877	2551	3532	3053
Other	..	..	1507	..	..	1841
Total	30457	38500	34900	43693	51800	55000

Sources: Bureau of Mines, *Quarry Accidents in the United States, 1929*, p. 38; and *1929 Census*, pp. 328 ff. (see notes, below).

[a] Deduction made for estimated stone dressing plants included (erroneously) in Census returns. Estimates made on assumption that the proportion of dressing workers to all workers in those establishments erroneously including workers employed in dressing stone, as given in the *1929 Census*, p. 330, was the same as the proportion in all establishments quarrying and dressing stone, as reported by the Bureau of Mines. The calculations were as follows:

	Bureau of Mines, Dressing workers/ all workers		Census, All workers		Estimate of dressing workers to be subtracted
Granite	$\frac{2,941}{6,564}$	×	4,351	=	1,949
Limestone	$\frac{2,428}{4,732}$	×	611	=	314
Marble	$\frac{3,799}{6,170}$	×	543	=	334
Sandstone	$\frac{789}{1,964}$	×	250	=	100
Slate	$\frac{1,406}{3,509}$	×	3,347	=	1,341

[b] Quarry employment classified as "all other and not stated" (i.e., not classified as dimension or nondimension) by the Bureau of Mines, but allocated by us to crushed and broken stone, on the basis of the proportion of "works" employment to that in quarries:

	Quarries	Quarries plus works
Limestone	2,902	3,696
Marble	217	398
Trap rock	396	507

[c] Estimate of 3,800 limekiln employment subtracted in addition to the adjustment in note b above. Estimate made by dividing total man-days as reported by Barger & Schurr (p. 333, footnote e) by the number of man-days per man per year at all limestone works, as given by Bureau of Mines.

[d] Estimated as follows, from *1929 Census*, pp. 332, 337, and 363:

	Crushed stone	All stone
Wage earners, limestone quarrying industry	16,443	22,267
Wage earners, quarrying by lime producers	4,619	4,619
Minus: Estimated inclusion of employment in dressing stone (footnote a, above)		— 314
Plus: Estimated employment in quarries by lime manufacturers from whom quarry employment data were not collected:		
Lime produced by firms not reporting employment (483,000 tons) divided by lime produced by firms reporting employment (17,370,000 tons) = 2.8%.		
2.8% of employment of firms reporting: .028 × 4,619 =	130	130
Adjusted total number of wage earners	21,190	26,700

[e] Quarries only.

[f] Estimated, for quarries only, from pp. 332 and 363 of *1929 Census*, as follows:

Wage earners in quarries of cement manufacturers reporting quarry employment		5,414
Limestone and cement rock produced by above	40,275,000 tons	
Limestone and cement rock produced by firms not reporting quarry employment	4,616,000 tons	
Estimated employment in quarries of latter:	$\frac{4,616,000}{40,275,000} \times 5,414 =$	620
Total estimated employment in cement rock quarries		6,034

[g] The Census offers two choices for all sandstone:

(1) Quarrying "enterprises" only (p. 334)	2,156
(2) Same plus "data for enterprises whose produce was ground into glass sand, or used as refractory materials (ganister), etc., which are similarly included in the figures for 1919" (p. 338)	3,578

We have chosen the latter figure as presumably the more comparable with Bureau of Mines data, though it seems uncertain whether it includes some employment in manufacturing activities. (We have also subtracted 100 from this figure of 3,578 (see footnote a, above), and rounded to indicate the roughness of the estimate.)

The omission of glass sand, ganister, etc., from the Census figure presumably accounts for the difference between Mines and Census in crushed sandstone.

Table D. Census vs. Bureau of Mines, 1939

(Index numbers of employment at quarries and works in 1939, as reported by the Bureau of Mines, with Census report taken as = 100)

	Dimension stone				Crushed stone				Total stone			
	Quarries		Quarries and works		Quarries		Quarries and works		Quarries		Quarries and works	
	Emp.	Man-hours	Emp.	Man-hours	Emp.	Man-hours	Emp.	Man-hours	Emp.	Man-hours	Emp.	Man-hours
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Granite	120	100				126	150	126		112	135	114
Limestone:												
Cement rock							(107)				107	
Lime						98	(117)	103		97	117	102
Other	121	78					116				116	
Marble	89	81				242	387	350		87	102	92
Sandstone	120	100				132	170	141		118	153	126
Slate	102	98				70	125	109		94	109	102
Trap		69				105	146	105		104	146	105
Other	118	n.a.				n.a.	n.a.	n.a.		n.a.	n.a.	n.a.
Total:												
Excl. cement and lime rock	110	91					121				118	
Excl. cement rock							120				118	
All stone						98	119	103		97	117	101

Computed from Tables E and F.

Table E. Census vs. Bureau of Mines, 1939: Employment at Quarries

(numbers of production workers)

	Dimension stone		Crushed and broken stone			Total stone		
	Bu. Mines, quarries only	Census, quarries only	Bu. Mines		Census:	Bu. Mines		Census:
			Quarries only	Quarries plus works	quarries plus crushing plants	Quarries only	Quarries plus crushing works	quarries plus crushing works
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Granite	2503 + 145[a]	[c]2204	1988 [a]442	2739 [a]410	2100	5078	5797	4304
Limestone:								
Cement rock			3796	([b]3796)	([b]3552)	3796	([b]3796)	([b] 3552)
Lime rock			3828	([b]3828)	([b]3275)	3828	([b]3828)	([b] 3275)
Other	986 + 404[a]	[c]1147	13557	19956 [a]502	17655	14947	21848	18802
Marble	1225 + 109[a]	[c]1498	55	111 [a]160	70	1389	1605	1568
Sandstone	718	[c]596	1491 [a]12	1929	1134	2221	2647	1730
Slate	981	[c]961	116 [a]46	374 [a]136	407	1143	1491	1368
Trap	20	[c]17	1806 [a]16	2735 [a]16	1886	1842	2771	1903
Other					858			858
Total:								
Excl. cement & lime rock	7091	[c]6421	19529	29068	24110	26620	36159	30531
Excl. cement rock			23357	32896	27385	30448	39987	33806
All stone			27153	36692	30937	34244	43783	37358

Sources: Bureau of Mines, *Quarry Accidents in the United States, 1939*, p. 45 and *1954 Census*, sections 14B, 14C, and 14D, except cement rock and lime rock, which are from *1939 Census*, p. 506.

[a] "All other and not stated," allocated according to employment in "outside works" as an indicator of establishments' probable nature (cf. Barger & Schurr, p. 331).

[b] Quarries only.

[c] Estimated as follows:

All stone, from *1954 Census*, p. 14B-5	30,531
Crushed and br. stone, Col. 5 above	24,110
	6,421

This 6,421 is distributed in proportion to man-hours worked in dimension stone quarries for the several kinds of stone (*1954 Census of Mineral Industries*, Vol. I, p. 14C-6).

Table F. Census vs. Bureau of Mines, 1939: Man-hours at Quarries

(1,000 man-hours)

	Dimension stone		Crushed and broken stone				Total stone			
	Bu. Mines, Quarries only	Census,[a] Quarries only	Bu. Mines Quarries	Bu. Mines Quarries plus works	Census Quarries	Census Quarries plus works	Bu. Mines Quarries	Bu. Mines Quarries plus crushing works	Census Quarries	Census Quarries plus crushing works
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Granite	4014 [b] 148	4146	3525 [b]500	5029 [b]712	3193	4574	8187	9903	7339	8720
Limestone (incl. cement & lime rock[c])	1626	2157	34613 [b]643	49601 [b]805	36025	48901	36882	52032	38182	51058
Marble	2279	2817	40 [b]221	133 [b]311	108	127	2540	2723	2925	2944
Sandstone	1117	1121	2067 [b]16	2789 [b]23	1581	1990	3200	3929	2702	3111
Slate	1775	1808	145 [b]62	602 [b]277	294	803	1982	2654	2102	2611
Trap	22	32	2732 [b]11	4198 [b]11	2620	4001	2765	4231	2652	4033
Other					1439	1970			1439	1970
Total (incl. cement & lime rock[c])	10981	12081	44575	64485	45260	62366	55556	75472	57341	74447

Sources: Bureau of Mines, *Quarry Accidents in the United States, 1939*, p. 46.
1939 Census of Mineral Industries, Vol. I, pp. 477 *et seq.*

[a] Total hours less hours "at preparation plants," *1939 Census*, Tables 24, 55, 86, 107, 132, 153.

[b] "Not stated" (not classified as dimension or crushed)—allocated as shown, with ratio of man-hours in works to man-hours in quarries as guide (cf. Barger & Schurr, p. 331).

[c] Quarries only, in the case of stone used for cement factories and limekilns.

Table G. Census vs. Bureau of Mines, 1954

(Index numbers of employment at quarries and works in 1954, as reported by the Bureau of Mines, with Census report taken as = 100)

	Dimension stone				Crushed and broken stone				Total stone			
	Quarries		Quarries and works		Quarries		Quarries and works		Quarries		Quarries and works	
	Emp.[a]	Man-hours[a]	Emp.	Man-hours	Emp.	Man-hours	Emp.	Man-hours	Emp.[a b]	Man-hours[a]	Emp.	Man-hours
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Granite	181	176	106	102	n.a.	126	110	95	107	145	108	99
Limestone:												
Cement rock					n.a.	116	n.a.	116	n.a.	116	n.a.	116
Lime rock					n.a.		n.a.		n.a.		n.a.	
Other	213	223	89	89	n.a.	106	96	84	74	109	95	85
Marble	133	127	138	135	n.a.	81	47	43	92	119	122	118
Sandstone	89	79	82	75	n.a.	138	130	110	89	108	104	92
Slate	n.a.	n.a.	85	88	n.a.	151	94	86	n.a.	603	87	87
Trap	n.a.	n.a.	n.a.	n.a.	n.a.	113	110	85	75	106	101	79
Other	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:												
Excl. cement & lime rock	159	156	98	96	n.a.	107	97	84	78	113	97	87
Excl. cement rock					n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
All stone					n.a.	109	n.a.	88	n.a.	114	n.a.	90

Table G sources: Computed from Tables H and I.

[a] Census data for dimension stone include only quarries which had no associated dressing plants.

[b] Crushing plants included in Census figures.

Table I sources: Bureau of Mines, *Injury Experience in the Quarrying Industry, 1954*, p. 37.
1954 Census of Mineral Industries, Vol. I, pp. 14C-4-5 and 14D-4-8.

[a] "All other and not stated" (quarries not classified as between dimension and nondimension), allocated according to proportions of quarry and processing plant employment (cf. Barger & Schurr, p. 331).

[b] Quarries only.

Table H. Census vs. Bureau of Mines, 1954: Employment at Quarries

(numbers of production workers)

	Dimension stone				Crushed and broken stone			Total stone			
	Bu. Mines		Census		Bu. Mines		Census:	Bu. Mines		Census	
	Quarries only	Quarries plus works	Quarries with no associated dressing plants	Quarries plus dressing plants	Quarries only	Quarries plus works	quarries plus crushing plants	Quarries only (Cols. 1 + 5)	Quarries plus works (Cols. 2 + 6)	Some quarries, plus crushing plants (Cols. 3 + 7)	All quarries plus plants (Cols. 4 + 7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Granite	1311 [a]347	2501 [a]1395	917	3662	1819	2573	2344	3477	6469	3261	6006
Limestone:											
Cement rock					4006	([b]4006)	n.a.	4006	([b]4006)	n.a.	n.a.
Lime rock					2570	([b]2570)	n.a.	2570	([b]2570)	n.a.	n.a.
Other	1004	2385	472	2693	17206 [a]649	22945 [a]916	24925	18859	26246	25397	27618
Marble	678 [a]138	1808 [a]570	612	1721	99	180	379	915	2558	991	2100
Sandstone	824	1485	925	1807	1129 [a]234	1632 [a]354	1529	2187	3471	2454	3336
Slate	467 [a]109	912 [a]159	n.a.	1259	173	435	464	749	1506	([c]464)	1723
Trap			142	247	1859 [a]267	2594 [a]363	2680	2126	2957	2822	2927
Other							803			(803)	803
Total:											
Excl. cement & lime rock	4878	11215	3068	11389	23435	31992	33124	28313	43207	36192	44513
Excl. cement rock					26005	34562	n.a.	30883	45777	n.a.	n.a.
All stone					30011	38568	n.a.	34889	49783	n.a.	n.a.

Sources: Bureau of Mines, *Injury Experience in the Quarrying Industry, 1954*, p. 37.
1954 Census of Mineral Industries, Vol. I, pp. 14C-4-5 and 14D-4-8.

[a] Allocation from "all other and not stated" category (i.e., not classified as dimension or nondimension).
[b] Quarries only.
[c] Employment in crushed stone only, from Col. 7.

Table I. Census vs. Bureau of Mines, 1954: Man-hours at Quarries

(production workers, 1,000 man-hours)

	Dimension stone				Crushed and broken stone				Total stone			
	Bu. Mines		Census		Bu. Mines		Census		Bu. Mines		Census	
	Quarries only	Quarries plus works	Quarries with no associated dressing plant	Quarries plus dressing plants	Quarries only	Quarries plus works	Quarries only	Quarries plus crushing plants	Quarries only	Quarries plus works	Some quarries only	All quarries plus plants
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Granite	2511 [a]611	4811 [a]2810	1769	7445	3853	5398	3049	5655	6975	13019	4818	13100
Limestone:												
Cement rock					8696	([b]8696)	12329	([b]12329)	8696	([b]8696)	12329	([b]12329)
Lime rock					5577	([b]5577)			5577	([b]5577)		
Other	1944	4782	872	5391	34546 [a]597	46322 [a]1127	33122	56335	37087	52231	33994	61726
Marble	1253 [a]322	3565 [a]1426	1245	3703	191	335	237	796	1766	5326	1482	4499
Sandstone	1377	2669	1752	3557	2040 [a]368	3002 [a]613	1751	3283	3785	6284	3503	6840
Slate	964 [a]207	1942 [a]303		2564	391	1031	259	1198	1562	3276	259	3762
Trap			255	495	3882 [a]360	5270 [a]544	3761	6834	4242	5814	4016	7329
Other							873	1706			873	1706
Total:												
Excl. cement & lime rock	9189	22308	5893	23155	46228	63642	43052	75807	55417	85950	48945	98962
Excl. cement rock					51805	69219	n.a.	n.a.	60994	91527	n.a.	n.a.
All stone					60501	77915	55381	88136	69690	100223	61274	111291

Sources and footnotes, see opposite, p. 546.

ML-29. STONE: Employment/Output

(QUARRIES ONLY, EXCLUDING PROCESSING PLANTS)

	Limestone			Granite			Basalt (cr.)	Sandstone		
	Dim.	Cr.	All (men per $ thousand, 1954 prices)	Dim.	Cr.	All (men per $ thousand, 1954 prices)		Dim.	Cr.	All (men per $ thousand, 1954 prices)
	A	B	C	D	E	F	G	H	I	J
1870										
1880				14.4		.41				
1889	7.5	.88	.524	6.8	1.39	.195		4.8	1.72	.229
1902			.442			.350				.286
1909			.360			.232	.65			.257
1911			.395			.160	.48			.252
1912			.369			.158	.47			.227
1913			.346			.149	.53			.235
1914			.338			.139	.52			.238
1915			.335			.182	.42			.245
1916			.276			.127	.42			.163
1917			.275			.182	.40			.135
1918			.315			.134	.39			.273
1919			.325			.155	.48			.173
1920			.297			.183	.37			.217
1921			.347			.142	.46			.187
1922	2.7	.36	.257	3.5	.52	.126	.37	3.0	.50	.147
1923	2.3	.33	.237	4.1	.41	.131	.41	2.4	.51	.134
1924	2.9	.33	.244	4.4	.41	.132	.36	3.3	.57	.169
1925	2.0	.26	.189	3.2	.47	.112	.26	2.3	.43	.119
1926	1.6	.24	.171	3.0	.26	.093	.24	3.9	.41	.169
1927	1.6	.23	.166	2.7	.25	.084	.22	2.5	.29	.114
1928	1.3	.22	.155	3.0	.27	.093	.18	2.7	.26	.115
1929	1.5	.20	.142	2.6	.20	.080	.18	2.0	.25	.095
1930	1.3	.20	.139	3.2	.16	.088	.16	2.0	.28	.098
1931	1.4	.23	.164	3.3	.18	.095	.17			.098
1932		.26	.189	4.0		.112	.21			.115
1933		.28	.200	5.2	.40	.175	.26			.148
1934		.23	.164	5.2	.27	.151	.16			.116
1935		.30	.208	4.9	.26	.141	.22		.45	.205
1936	1.2	.21	.152	4.5	.12	.103	.14		.25	.122
1937	1.5	.19	.145	4.4	.22	.127	.13		.33	.135
1938		.19	.146	4.5	.20	.123	.15		.23	.115
1939	.94	.164	.120	3.7	.195	.111	.112		.17	.093
1940	.92	.151	.112	3.5	.157	.100	.121		.28	.117
1941		.143	.108	2.8	.163	.091	.106		.23	.107
1942		.133	.102	3.1	.156	.095	.102		.22	.096
1943		.120	.092	4.2	.145	.106	.084		.18	.087
1944			.083			.100	.079			.083
1945			.080			.086	.082			.136
1946		.124	.097	2.8	.123	.079	.104		.37	.163
1947		.113	.087	3.1	.118	.084	.087		.26	.115
1948		.106	.081	3.0	.115	.079	.087		.28	.117
1949		.117	.091	3.7	.145	.100	.089		.33	.124
1950			.087			.084	.092			.101
1951	1.5	.096	.076	3.4	.107	.081	.065		.20	.098
1952	1.3	.093	.073	2.9	.101	.073	.071		.18	.086
1953		.093	.073	2.5	.096	.067	.070		.22	.097
1954	.85	.082	.063	2.4	.088	.062	.068		.11	.062
1955	.85	.069	.054	1.9	.090	.059	.053		.10	.049
1956		.072	.056	2.6	.069	.055	.058	1.8	.09	.048
1957	1.1	.071	.056	2.4	.071	.055	.042		.07	.040

(Men per thousand tons, except as noted)

	Marble (dim.)	Slate			Lime rock	Cement rock	Total			
		Dim.	Cr.	All (men per $ thousand, 1954 prices)			Dim.	Cr.	Dim. plus cr. (men per $ thousand, 1954 prices)	Col. S adjusted to exclude noncommercial output
	K	L	M	N	O	P	Q	R	S	T
1870	20	14		.34						
1880	24	16.7		.40						
1889	24	17.9		.421					.273	
1902	25	14.3		.345					.353	
1909	26			.494					.302	
1911	8.6			.244		.287			.257	
1912	10.3			.216		.183			.248	
1913	8.7			.211		.198			.238	
1914	8.7			.241		.193			.228	
1915	9.9			.283		.202			.247	
1916	8.2			.258		.183			.195	
1917	9.0			.268		.168			.214	
1918	7.5			.196		.167			.231	
1919	6.9			.213		.168			.228	
1920	8.2			.230		.158			.226	
1921	11.0			.270		.137			.237	
1922	9.3	12.5		.207		.124	3.9	.37	.188	
1923	8.4	13.2		.211		.115	3.9	.34	.179	
1924	7.7	14.7		.218		.111	4.4	.33	.182	
1925	7.0	12.2	.120	.190		.110	3.3	.26	.144	
1926	7.0	14.5		.219		.115	3.3	.24	.138	
1927	8.6	10.6	.087	.169		.105	3.0	.22	.126	
1928	8.0	9.6	.024	.158		.094	2.9	.21	.122	
1929	8.1	8.8		.143		.088	2.7	.18	.109	.112
1930	8.3	9.1	.034	.153		.088	2.6	.18	.111	.114
1931	9.0	9.1	.043	.153		.113	3.1	.20	.125	.132
1932	7.1	10.7	.048	.150		.166	3.3	.23	.135	.145
1933	8.3	11.1	.105	.160		.238	4.3	.24	.158	.169
1934	8.0	7.8	.35	.128		.200	3.4	.19	.132	.153
1935	14.6	6.0	.78	.116	.600	.200	3.2	.27	.172	.199
1936	9.5	4.5	.55	.091	.551	.154	3.1	.18	.123	.147
1937	13.4	6.2	.64	.122	.551	.146	3.6	.18	.127	.150
1938	14.6	6.4	.34	.106	.603	.146	3.6	.17	.122	.155
1939	11.2	5.7	.34	.101	.482	.122	2.7	.152	.104	.136
1940	13.0	6.1	.53	.111	.440	.114	2.5	.147	.103	.128
1941	12.0	5.3	.39	.090	.386	.098	2.5	.137	.096	.114
1942	12.9	6.6	.35	.092	.354	.091	2.7	.126	.091	.100
1943	7.9	3.7	.30	.054	.279	.107	2.4	.114	.083	.088
1944	7.3			.043	.227	.122			.075	.079
1945	7.8			.036	.232	.112			.073	.076
1946	8.7	2.3	.50	.049	.268	.096	2.4	.122	.087	.090
1947	9.9	5.3	.28	.063	.259	.089	2.7	.106	.079	.083
1948	11.9	5.0	.36	.073	.234	.077	2.5	.103	.076	.081
1949	10.7	4.5	.51	.074	.254	.077	2.7	.116	.085	
1950	11.8			.072	.199	.071			.080	
1951	11.3	4.7	.43	.076	.190	.069	2.8	.091	.070	
1952	10.4	4.2	.34	.066	.197	.066	2.4	.087	.067	
1953	12.0	4.4	.27	.066	.185	.063	2.3	.089	.067	
1954	10.8	3.6	.33	.058	.182	.058	1.9	.079	.059	
1955	7.2	4.4	.18	.057	.151	.055	1.6	.067	.050	
1956	9.4	4.2	.19	.056	.155	.049	1.9	.066	.051	
1957	6.8	4.2	.35	.066	.152	.052	1.9	.065	.049	

(Sources and Notes on next page)

ML-29, STONE: Employment/Output (continued)

ML-29, SOURCES

For each column, the employment figures of Table ML-28 were divided by the output figures of Tables MO-23, MO-22, and MO-21, for dimension stone, crushed and broken stone, and all of each kind of stone, respectively. Exceptions are:

COL. G, Basalt. Employment was divided by output of crushed stone only, no account being taken of output of dimension basalt.

COL. K, Marble. Employment was divided by output of dimension stone only, no account being taken of output of crushed marble.

COL. O, Lime rock. Employment was divided by twice the equivalent quicklime output (Table MO-25, Col. C).

COL. P, Cement rock. Employment was divided by cement output (Table MO-24, Col. C) multiplied by .25 (tons of rock used per barrel of cement produced, average for 1929: *Min. Resources 1929,* Part II, p. 407).

COL. T, Total, adjusted to exclude noncommercial output. The quantities of crushed and broken stone produced by noncommercial quarries for 1929-48 (Table MO-22 notes) were weighted by the average 1954 price of all crushed and broken stone (Table MP-28, Col. K, divided by total output of Table MO-22, Col. H), and subtracted from total stone output (Table MO-21, Col. K); these totals were then divided into total employment (Table ML-28, Col. S), which excludes men in noncommercial quarries until 1949.

ML-29, NOTES

Dim. = dimension stone.

Cr. = crushed and broken stone.

The missing figures result from:

(1) Lack of separate employment data for dimension and nondimension stone prior to 1922 and for 1944-45 and 1950, as noted in Table ML-28.

(2) Our omission of employment/output ratios for classifications that employed fewer than 1,000 men, except in the case of marble and slate, where the interest that attaches to these series as the longest-term series makes ratios worth while.

COL. T. It is not possible to adjust the employment figures consistently to include or exclude noncommercial (principally government) quarries, as the data are incomplete. Presumably, however, such employment was excluded from total quarry employment reported by the Bureau of Mines until 1949, since which time it has been included, but without separate reporting. Thus we have adjusted the output figures for those years in which noncommercial quarry employment was excluded.

Lack of data prevents adjusting the employment, output, or employment/output figures to exclude noncommercial quarries by kind of stone. Thus the employment/output figures in the 1930's may be substantially too low for those kinds of rock where noncommercial operations were important (presumably limestone, granite, basalt, and sandstone).

ML-30. CEMENT: Man-Hours/Output

	WPA-NRP, output per man-hour (1929 = 100)	WPA-NRP, barrels per man-hour	BLS, output per man-hour (1947 = 100)	Col. B / Col. C	Preferred series (man-hours per barrel)
	A	B	C	D	E
1880	17.6				3.33
1890	29.1				2.00
1902	36.2				1.61
1904	34.6				1.70
1909	47.5				1.24
1914	60.8				.962
1915	60.7				.965
1916	60.5				.968
1917	60.4				.970
1918	60.2				.973
1919	60.1	1.026			.975
1920		1.059			.944
1921		1.218			.821
1922		1.345			.744
1923		1.321			.757
1924		1.354			.739
1925		1.467			.682
1926		1.476			.678
1927		1.539			.650
1928		1.612			.620
1929		1.706	64.3	.02653	.586
1930		1.782			.561
1931		2.038			.491
1932		1.986			.504
1933		2.007	75.7	.02651	.498
1934		2.048			.488
1935		1.926	72.6	.02653	.519
1936		2.188			.457
1937		2.123	79.9	.02657	.471
1938		2.173			.460
1939			89.7		.420
1945			80.9		.465
1949			107.9		.349
1950			116.0		.324
1951			122.5		.307
1952			126.5		.298
1953			130.7		.288
1954			144.0		.261
1955					.259
1956					.248
1957					.248

ML-30, SOURCES

Col. A, WPA-NRP Report S-2, Table B-13, p. 162, "Output per man-hour" (interpolated data for 1890, 1915-18).

Col. B, *Ibid.*, Table A-27, p. 143, "Barrels of equivalent portland cement produced per man-hour" (1928-33 taken from *Min. Yearbook 1935*, p. 893, a sample study).

Col. C, Bureau of Labor Statistics, "Indexes of output per man-hour for selected industries: 1929-55" (release of March 1957), p. 3, Table 2.

Col. D, Ratio, Col. B/Col. C.

Col. E, Preferred series, man-hours/output

1880-1919. Reciprocal of Col. A, linked to Col. B at 1919 (ratio, .01707).

1920-38. Reciprocal of Col. B.

1939-54. Reciprocal of Col. C, linked to Col. B at 1937.

1955-57. Extended by employment and average weekly hours data, from BLS *Emp. & Earnings* Bull., May 1959 supplement, pp. 71 and 120-21; plus output data of Table MO-24, Col. C.

ML-30, NOTES

A special study of the cement industry by the Work Projects Administration National Research Project and the National Bureau of Economic Research (*Mechanization in the Cement Industry*, Philadelphia, 1939) showed no change in productivity from 1928 to 1935, a period in which most studies show a gain of 15-20%. The reason for the difference appears to lie principally in the NRP study's sampling procedure, which used a fixed group of plants, covering a smaller fraction of the industry's "wet process" plants as time passed. As wet process plants were more productive than dry process, the industry's productivity showed more gain than the sample.

ML-31. SAND AND GRAVEL: Employment and Employment/Output

	Bu. of Mines, average no. of men (1000)	Percent of commercial industry rep. in Col. A	Employment, Col. A raised to 100% Col. A / Col. B (1000)	Census, production workers	Census, employment/ output (men per 1000 tons)	Preferred series, employment/ output (men per 1000 tons)
	A	B	C	D	E	F
1929				[a]18.1	.103	[b].121
1933	12.5	71.4	17.5			.265
1934	14.6	78.4	18.6			.247
1935	11.9	75.4	15.8			.187
1936	16.1	83.8	19.2			.160
1937	16.1	81.8	19.7			.158
1938	15.0	81.1	18.5			.175
1939	15.6	81.7	19.1	17.0	.138	.162
1940	16.6	77.1	21.5			.164
1941	19.9	79.6	25.0			.137
1942	25.1	78.7	31.9			.137
1943	20.3	78.3	25.9			.147
1944	17.8	80.3	22.2			.147
1945	16.5	76.7	21.5			.141
1946	18.4	82.9	22.2			.116
1947	21.2	84.5	25.1			.118
1948	21.9	86.0	25.5			.109
1949	23.0	86.4	26.6			.115
1950	24.3	91.8	26.5			.103
1951	24.4	90.4	27.0			.094
1952	25.8	93.0	27.7			.092
1953	24.7	90.3	27.4			.089
1954	31.9	91.9	34.7	30.5	.077	.087
1955	30.9	86.4	35.8			.085
1956	32.8	87.4	37.5			.080
1957	31.5	80.7	39.0			.084

ML-31, SOURCES

COL. A
- 1933-38. *Min. Yearbook 1940, Review of 1939*, p. 1218.
- 1939-45. *Min. Yearbook 1945*, p. 1307.
- 1946-49. *Min. Yearbook 1949*, p. 1081.
- 1950-53. *Min. Yearbook 1954*, Vol. I, p. 991, "Employment in the commercial sand and gravel industry and average output per man in the U.S., by regions: Employment: Average number of men."
- 1954-57. *Min. Yearbook 1957*, Vol. I, p. 1005.

COL. B, Same sources as Col. A, "Percent of commercial industry represented."

COL. C, Col. A raised to 100% (Col. A/Col. B times 100).

COL. D, *1954 Census of Mineral Industries*, p. 14E-4, "Production and development workers."

COL. E, Col. D divided by Col. A of Table MO-26 (Census output data).

COL. F, Preferred series, employment/output
- 1929. Extrapolated by Col. E (linking at 1939).
- 1933-57. Col. C divided by Col. C of Table MO-26.

ML-31, NOTES

[a] The *1929 Census of Mines and Quarries*, p. 381, reported 15,994 "wage earners" as an average of 12 monthly figures, including shutdown periods, and 18,885 as total number of wage earners on a "representative day" *when the plant was operating*.

[b] If we adjust the employment figure by the ratio of estimated shifts per man (294 in 1929 divided by 255 in 1939), we arrive at a figure of .139 for the employment/output ratio.

ML-32. CLAYS: Employment and Employment/Output

	Employment[a] (1000)						Output ($ mil., 1954 prices)	Preferred series, employment/output (men per $1000)
	Kaolin and ball clay	Fire clay	Fuller's earth	Bentonite	Misc. clays	Preferred series, total clays employment		
	A	B	C	D	E	F	G	H
1870		.067						
1880	.28							
1902	[b,c]2.43		[c].11		[b]	[c]2.54	6.5	.39
1909	[b]3.27		.33		[b]	3.60	8.8	.41
1919	[b]5.45		.82		[b]	6.27	11.2	.56
1929	[b]4.14		.99		[b]	5.13	26.1	.20
1939	1.80	[d]2.06	.56	.36	[d].88	5.66	26.2	.22
1954	2.82	1.80	.51	.58	1.05	6.76	72.0	.094

ML-32, SOURCES

COLS. A–E, *1954 Census of Mineral Industries*, pp. 14F-5 to -10, "Production and development workers."

COL. F, Preferred series, total clays employment. Sum, Cols. A through E.

COL. G, Output. Table MO-27, Col. J, transcribed.

COL. H, Preferred series, employment/output. Ratio, Col. F/ Col. G.

ML-32, NOTES

[a] Production and development workers, mines and preparation plants.

[b] Miscellaneous included with kaolin, fire clay, etc.

[c] Employment reduced to 300-day basis for establishments which operated for a shorter period.

[d] Estimated by assuming that employment in "independent" mines (not operating in conjunction with cement, clay products, etc., manufacturing operations) was the same proportion of employment in all (fire clay or misc.) clay mines as were man-hours in these two classes (independent and captive) in 1954. The mines attached to manufacturing operations are omitted from our output series (Table MO-27).

ML-33. PHOSPHATE ROCK: Employment and Employment/Output

	WPA-NRP, production workers (1000)	Census, production & development workers (1000)	Preferred series, production workers (1000)	Output (million long tons)	Preferred series, employment/output (prod. workers per 1000 long tons)
	A	B	C	D	E
1880	2.475	[a]2.475	2.475	.211	11.73
1889	5.011	4.901	5.011	.546	9.18
1902	5.971	[b]5.971	5.971	1.49	4.01
1909	7.873	7.923	7.873	2.34	3.36
1919	5.791	4.373	5.791	2.27	2.55
1920	7.052		7.052	4.10	1.72
1921	5.545		5.545	2.06	2.69
1922	3.788		3.788	2.42	1.57
1923	3.531		3.531	3.01	1.17
1924	3.784		3.784	2.87	1.32
1925	3.593		3.593	3.48	1.03
1926	3.334		3.334	3.21	1.04
1927	3.042		3.042	3.17	.96
1928	3.244		3.244	3.50	.93
1929	3.218	3.201	3.218	3.76	.86
1930	3.280		3.280	3.93	.83
1931	2.666		2.666	2.54	1.05
1932	1.899		1.899	1.71	1.11
1933	2.305		2.305	2.49	.93
1934	2.909		2.909	2.84	1.02
1935	3.100	2.638	3.100	3.04	1.02
1936	3.233		3.233	3.35	.97
1937	3.483		3.483	3.96	.88
1939		3.372	3.372	3.76	.90
1954		4.579	4.578	13.04	.36

ML-33, SOURCES

Col. A, WPA-NRP Report E-7, *Phosphate-Rock Mining, 1880-1937*, p. 109, "Total average number of men" (production workers).

Col. B, *1954 Census of Mineral Industries*, p. 14H-6, "Production and development workers."

Col. C, Preferred series, employment
1880-1937. Col. A, transcribed.
1939-54. Col. B, transcribed.

Col. D, Output. Table MO-29, Col. C, transcribed.

Col. E, Preferred series, employment/output. Ratio, Col. C/Col. D.

ML-33, NOTES

[a] All employees.

[b] Employment in terms of 300-day years for establishments which operated for a shorter period.

The WPA-NRP report corrected the Census figures for 1919 and 1929 by making estimates (based on productivity estimates and output figures) for mines which did not give adequate employment reports to the Census (Report E-7, p. 101, Table A-2, fn. a).

ML-34. SULFUR: Employment and Employment/Output

	Census, production and development workers (1000)	Output, Table MO-31, Col. A (mil. long tons)	Preferred series, employment/output (workers per 1000 long tons)
	A	B	C
1889	.010	.0004	25
1902	[a,b].97	.007	--
1909	.366	.274	1.34
1919	1.13	1.19	.950
1929	[a]2.20	2.36	.932
1939	1.52	2.09	.727
1954	3.08	5.58	.552

ML-34, SOURCES

Col. A
1889-1909. *1939 Census of Mineral Industries*, Vol. I, p. 853, "Wage earners."
1919-54. *1954 Census of Mineral Industries*, p. 14H-7, "Production and development workers."

Col. B, Output: Table MO-31, Col. A, transcribed.

Col. C, Preferred series, employment/output. Ratio, Col. A/Col. B.

ML-34, NOTES

[a] Includes pyrites, which were about 2% of value of product in 1929 (*1939 Census of Mineral Industries*, p. 853), much larger in 1902 (cf. Table MO-31).

[b] Employment reduced to 300-day-year basis for establishments which operated for a shorter period.

ML-35. FLUORSPAR: Employment

(thousands)

	1954 Census, production & development workers	1935 Min. Yearbook, average no. of men employed	WPA-NRP, avg. no. of wage earners	Preferred series, production workers
	A	B	C	D
1889	.097			.097
1902	[a].27			[a].27
1909	.30			.30
1919	1.12		1.12	1.12
1926		1.17	1.08	1.04
1927		1.11	0.92	.99
1928		1.01	1.01	.90
1929	1.05	1.18	1.05	1.05
1930		1.13	.86	1.01
1931		.74	.40	.66
1932		.31	.25	.28
1933		.58	.55	.52
1934			.87	.87
1935			.93	.93
1939	1.29			1.29
1954	1.00			1.00

ML-35, SOURCES

COL. A, *1954 Census of Mineral Industries*, p. 14H-5, "Production and development workers."

COL. B, *Min. Yearbook 1935*, p. 1087, "Average number of men employed" (Bureau of Mines special study).

COL. C, WPA-NRP Report S-2, p. 147, Table A-31, average number of wage earners, italicized (interpolated) data omitted (Census, and Bureau of Mines study, *Min. Yearbook 1935*).

COL. D, Preferred series, employment/output
1889-1919, 1929, 1939, 1954. Col. A, transcribed.
1926-28, 1930-33. Col. B, multiplied by 1929 ratio of Col. A/Col. B (ratio, .8898).
1934-35. Col. C, transcribed.

ML-35, NOTES

[a] Number of workers reduced to 300-day-year basis for establishments which operated for shorter periods.

The WPA-NRP series apparently is an attempt to estimate full-time-equivalent employment, rather than actual employment. Thus they estimate the "number of men" from average and aggregate hours figures given in the 1935 Bureau of Mines study (*Min. Yearbook 1935*, p. 1090), instead of using the employment figures given in that study. This of course gives sharply different results in the years of "spread-work" or part-time employment, 1930-32. Since we desire a series independent of man-hours, we have used the Bureau of Mines series for 1926-33. However, we have reduced this series to the level of our preferred series (Census), which averages employment in operating and shutdown periods together, thereby approaching a full-time-equivalent employment. The difference is small in years of high employment.

ML-36. FLUORSPAR: Employment/Output

	Employment, Table ML-35, production workers (1000)	Output, Table MO-32 (1000 tons)	Preferred series, Col. A/Col. B (production workers per 1000 tons)
	A	B	C
1889	.097	9.5	10.2
1902	.27	48.0	5.6
1909	.30	50.7	5.9
1919	1.12	138	8.1
1926	1.04	129	8.1
1927	.99	112	8.8
1928	.90	140	6.4
1929	1.05	146	7.2
1930	1.01	95.8	10.5
1931	.66	53.5	12.3
1932	.28	25.2	11.1
1933	.52	72.9	7.1
1934	.87	85.8	10.1
1935	.93	123.7	7.5
1936		176.9	
1937		181.2	
1938		80.4	
1939	1.29	182.8	7.06
1954	1.00	246	4.07

ML-36, SOURCES

COL. A, Employment. Table ML-35, Col. D, transcribed.

COL. B, Output. Table MO-32, Col. F, transcribed.

COL. C, Preferred series, employment/output. Ratio, Col. A/Col. B.

ML-36, NOTES

The rise in workers per 1,000 tons from 1902-09 to 1926-29 is surprising; it may be due to the poor quality of the output data, which make no allowance for quality (i.e., average percentage of F_2O may have risen in this period). The rise in the 1930's is no doubt largely due to "make-work" policies and the inevitable inefficiency of below-capacity operations.

COMPARISON TABLES (N)

N-1. GENERAL WHOLESALE PRICE INDEX

	Hist. Stat. (1926 = 100)	Stat. Abstract (1947-49 = 100)	Col. B / Col. A	All commodities other than farm & foods (1947-49 = 100)	Preferred series	
					Reciprocals (1/Col. F)	(1947-49 = 100)
	A	B	C	D	E	F
1869	93.5				.01645	60.8
1870	86.7				.01773	56.4
1871	82.8				.01859	53.8
1872	84.5				.01821	54.9
1873	83.7				.01838	54.4
1874	81.0				.01901	52.6
1875	77.7				.01980	50.5
1876	72.0				.02137	46.8
1877	67.5				.02278	43.9
1878	61.7				.02494	40.1
1879	58.8				.02618	38.2
1880	65.1				.02364	42.3
1881	64.4				.02387	41.9
1882	66.1				.02325	43.0
1883	64.6				.02381	42.0
1884	60.5				.02544	39.3
1885	56.6				.02717	36.8
1886	56.0				.02747	36.4
1887	56.4				.02725	36.7
1888	57.4				.02681	37.3
1889	57.4				.02681	37.3
1890	56.2				.02740	36.5
1891	55.8				.02755	36.3
1892	52.2				.02950	33.9
1893	53.4				.02882	34.7
1894	47.9				.03215	31.1
1895	48.8				.03154	31.7
1896	46.5				.03311	30.2
1897	46.6				.03300	30.3
1898	48.5				.03175	31.5
1899	52.2				.02950	33.9
1900	56.1				.02740	36.5
1901	55.3				.02786	35.9
1902	58.9				.02611	38.3
1903	59.6				.02584	38.7
1904	59.7				.02577	38.8
1905	60.1				.02558	39.1
1906	61.8				.02488	40.2
1907	65.2				.02358	42.4
1908	62.9				.02445	40.9
1909	67.6				.02278	43.9
1910	70.4				.02183	45.8
1911	64.9				.02370	42.2
1912	69.1				.02227	44.9
1913	69.8			50.0	.02203	45.4
1914	68.1			47.5	.02257	44.3
1915	69.5			48.6	.02212	45.2
1916	85.5			63.1	.01799	55.6
1917	117.5			81.7	.01309	76.4
1918	131.3			89.1	.01172	85.3
1919	138.6			92.1	.01110	90.1
1920	154.4			115.3	.00996	100.4
1921	97.6			75.0	.01577	63.4
1922	96.7			73.2	.01590	62.9
1923	100.6			74.6	.01529	65.4
1924	98.1			71.3	.01567	63.8
1925	103.5			73.4	.01486	67.3
1926	100.0	65.0	.650	71.5	.01538	65.0
1927	95.4	62.0	.650	67.2	.01613	62.0
1928	96.7	62.9	.650	66.4	.01590	62.9
1929	95.3	61.9	.650	65.5	.01616	61.9
1930	86.4	56.1	.649	60.9	.01783	56.1
1931	73.0	47.4	.649	53.6	.02110	47.4
1932	64.8	42.1	.650	50.2	.02375	42.1
1933	65.9	42.8	.649	50.9	.02336	42.8
1934	74.9	48.7	.650	56.0	.02053	48.7
1935	80.0	52.0	.650	55.7	.01923	52.0
1936	80.8	52.5	.650	56.9	.01905	52.5
1937	86.3	56.1	.650	61.0	.01783	56.1
1938	78.6	51.1	.650	58.4	.01957	51.1
1939	77.1	50.1	.650	58.1	.01996	50.1
1940	78.6	51.1	.650	59.4	.01957	51.1
1941	87.3	56.8	.651	63.7	.01761	56.8
1942	98.8	64.2	.650	68.3	.01558	64.2
1943	103.1	67.0	.650	69.3	.01493	67.0
1944	104.0	67.6	.650	70.4	.01479	67.6
1945	105.8	68.8	.650	71.3	.01453	68.8
1946	121.1	78.7	.650	78.3	.01271	78.7
1947	152.1	96.4	.634	95.3	.01037	96.4
1948	165.1	104.4	.632	103.4	.00958	104.4
1949	155.0	99.2	.640	101.3	.01008	99.2
1950	161.5	103.1	.638	105.0	.00970	103.1
1951	180.4	114.8	.636	115.9	.00871	114.8
1952		111.6		113.2	.00896	111.6
1953		110.1		114.0	.00908	110.1
1954		110.3		114.5	.00907	110.3
1955		110.7		117.0	.00903	110.7
1956		114.3		122.2	.00875	114.3
1957		117.6		125.6	.00850	117.6

N-1, SOURCES

COL. A, *Hist. Stat. 1949*, series L-15 (1926=100).
COL. B, *Stat. Abstract 1959*, p. 329.
COL. C, Ratio, Col. B/Col. A.
COL. D, BLS, *Wholesale Prices and Price Indexes*, reprint from Bulletin No. 1235, (July 1958), Table 2.
COL. E, Preferred series, reciprocals of Col. F (for computation of relative prices).
COL. F, Preferred series.
1869-1925. Col. A linked to Col. B at 1926.
1926-57. Col. B, transcribed.

N-1, NOTES

This series, a simple splicing of the BLS' old and new series, is the most widely used measure of the movement of the wholesale price level, though it has important defects, as noted below. Col. C shows that the old and the revised series are not precisely parallel for the years since 1946, but for earlier years the movement is identical.

The index has gone through many stages of improvement and expansion. For 1947-57, the index was calculated from about 1,900 price quotations; for 1940-45, nearly 900; for 1921-26, 404; for 1890-1913, 252. Prior to 1890, the BLS series was extended by data from the U.S. Senate's Aldrich report. The index in these years is based on a simple arithmetic average of unweighted price relatives (1926=100), for 223 commodities, with no logical system of weighting. (Of the 223 series, 53 are for foods and 54 for metals, including 25 on pocket knives.) For 1890-1913, a crude weighting was provided by the use of more quotations for the more important commodities or groups of commodities. Beginning with 1914, explicit weighting was provided by use of the Laspeyres formula, $\frac{\Sigma p_1 q_0}{\Sigma p_0 q_0}$ with weights proportioned to marketings of each commodity, changes in the fixed weights being made from time to time to keep them current (*Hist. Stat. 1949*, notes, p. 228).

In addition to the poor weighting and other problems with the early data, this index is an imperfect standard of comparison because the resource commodities themselves provide much of the weight in the index. This damps the movements of other prices, which might contrast more sharply with the movements of resource material prices than they appear to do. The problem is worse for the earlier years, when half the weight was assigned to raw or slightly processed materials; in 1954, only 17.5% of the weight was in raw materials. Following are excerpts from the tables of weights published by the BLS in various *Wholesale Prices* bulletins:

	1954		1926		1914	
	Raw materials	Raw plus processed	Raw materials	Raw plus processed	Raw materials	Raw plus processed
All commodities						
Number of price quotations used		1,900		404		340
Percentage of weights:						
Farm products	10.8	10.8	21.2	21.2	27.6	27.6
Processed foods	—	13.7	—	22.5	—	26.3
Cotton and wool products	—	3.0	—	5.9	—	11.2
Hides and leather products	—	1.4	—	3.7	—	
Rubber and products	.2	1.8	.8	2.5	.9	.9
Lumber and wood products	2.1	2.7	2.6	2.6	9.3	9.3
Pulp, paper, and allied products	.6	3.7	.3	1.7	—	.8
Coal	.7	.7	6.9	6.9	6.4	6.4
Petroleum and products	.7	4.8	3.0	7.5	2.1	3.3
Gas	1.0	1.0	—	.8	—	—
Metals and metal products	.7	13.6	2.3	13.2	2.3	5.7
Nonmetallic minerals—structural	.7	2.1	.4	2.0	—	—
Total	17.5	59.3	37.5	90.5	48.6	91.5
Sources:	BLS Bull. 1235 (1958)		BLS Bull. 493 (1929)		BLS Bull. 296 (1922)	

Two indexes which partially meet this problem are offered by the BLS for the period after 1913: (1) All commodities other than farm products and foods; (2) Finished goods (goods to users). The first excludes the large sector of farm materials and products therefrom, but includes raw mineral, lumber, etc. prices. The second excludes materials used for processing, but includes materials used "raw" by consumers, such as potatoes and coal. We show the first of these two in Col. D; the second is omitted as superfluous, since it generally falls between the other two, which are themselves fairly close together. None of these indexes gives weight to the important sector of noncommodity prices, such as rents, services, electricity, transportation, etc.

N-2. POPULATION

	Reciprocals of Col. B ($\times 10^{12}$)	Population (1000)
	A	B
1869	25607	39051
1870	25059	39905
1871	24427	40938
1872	23825	41972
1873	23252	43006
1874	22706	44040
1875	22186	45073
1876	21688	46107
1877	21212	47141
1878	20758	48174
1879	20321	49208
1880	19895	50262
1881	19401	51542
1882	18931	52821
1883	18484	54100
1884	18057	55379
1885	17649	56658
1886	17259	57938
1887	16887	59217
1888	16530	60496
1889	16187	61775
1890	15858	63056
1891	15537	64361
1892	15228	65666
1893	14932	66970
1894	14646	68275
1895	14371	69580
1896	14107	70885
1897	13852	72189
1898	13606	73494
1899	13369	74799
1900	13141	76094
1901	12889	77585
1902	12632	79160
1903	12402	80632
1904	12170	82165
1905	11930	83820
1906	11704	85437
1907	11494	87000
1908	11272	88709
1909	11050	90492
1910	10821	92407
1911	10653	93868
1912	10489	95331
1913	10285	97227
1914	10088	99118
1915	9945	100,549
1916	9807	101,966
1917	9684	103,266
1918	9690	103,203
1919	9568	104,512
1920	9393	106,466
1921	9213	108,541
1922	9086	110,055
1923	8932	111,950
1924	8763	114,113
1925	8633	115,832
1926	8518	117,399
1927	8401	119,038
1928	8299	120,501
1929	8212	121,770
1930	8118	123,188
1931	8055	124,149
1932	8003	124,949
1933	7956	125,690
1934	7906	126,485
1935	7852	127,362
1936	7801	128,181
1937	7754	128,961
1938	7694	129,969
1939	7632	131,028
1940	7569	132,122
1941	7496	133,402
1942	7415	134,860
1943	7313	136,739
1944	7226	138,397
1945	7146	139,928
1946	7073	141,389
1947	6938	144,126
1948	6820	146,631
1949	6703	149,188
1950	6593	151,683
1951	6478	154,360
1952	6368	157,028
1953	6264	159,636
1954	6157	162,417
1955	6051	165,270
1956	5946	168,176
1957	5841	171,196

N-2, SOURCES

COL. A, Reciprocals of Col. B, times 1,000,000,000,000 (for calculation of per capita outputs, etc.).

COL. B, Population

1869-1929. *Hist. Stat. 1960,* series A-2, "Total population, residing in the United States."

1930-55. *Ibid.,* series A-1, "Total population including Armed Forces overseas."

1956-57. *Stat. Abstract 1959,* p. 5.

N-2, NOTES

This seems the most appropriate series for calculation of per capita series, as our resource output and consumption series are nearly all for the continental United States and the armed forces overseas have generally been supplied from the United States.

N-3. GROSS NATIONAL PRODUCT

	Manufacturing output (1947-49 = 100)	Extractive output ($ bil., 1954 price weights)	Commodity output index	Kuznets, GNP in 1929 prices ($ bil.)	Commerce extrapolated by Kuznets ($ bil.)	Commerce extrapolated by Col. C ($ bil.)	Col. E / Col. F	Adjusted ratios of Col. G	Prefetred series, GNP ($ bil., 1954 prices)
	A	B	C	D	E	F	G	H	I
1870	4.0	10.3	3.38			26.2		.820	21
1871	4.2	10.4	3.46	(7.3)	(15.3)	26.8	(.557)	.830	22
1872	5.0	11.2	3.87			30.0		.840	25
1873	4.8	11.2	3.81	[10.4]	[21.8]	29.6	.745	.850	25
1874	4.6	11.1	3.73			28.9		.860	25
1875	4.5	11.7	3.82			29.6		.870	26
1876	4.5	11.9	3.87	(13.5)	(28.3)	30.0	(.911)	.880	26
1877	4.8	13.1	4.21			32.7		.890	29
1878	5.1	13.5	4.39	[14.9]	[31.2]	34.1	.872	.900	31
1879	5.8	14.1	4.73			36.7		.905	33
1880	6.7	14.5	5.07			39.3		.910	36
1881	7.4	13.9	5.15	(16.3)	(34.1)	40.0	(.841)	.915	37
1882	7.8	15.3	5.56			43.1		.920	40
1883	8.0	15.3	5.62	[19.5]	[40.8]	43.6	.928	.925	40
1884	7.5	16.4	5.72			44.4		.930	41
1885	7.5	16.2	5.68			44.1		.930	41
1886	9.1	16.3	6.17	(22.7)	(47.5)	47.9	(1.002)	.930	45
1887	9.6	16.5	6.35			49.3		.930	46
1888	9.9	17.2	6.59	[23.1]	[48.3]	51.1	.928	.930	48
1889	10.6	17.9	6.95			53.9		.935	50
1890	11.4	18.0	7.20			55.9		.940	53
1891	11.7	20.6	7.85	(23.5)	(49.2)	60.9	(.868)	.940	57
1892	12.6	17.6	7.47			58.0		.940	55
1893	11.2	17.6	7.06	[26.8]	[56.1]	54.8	.939	.950	52
1894	10.9	18.6	7.18			55.7		.950	53
1895	13.0	19.2	7.93			61.5		.950	58
1896	11.8	20.5	7.86	(30.1)	(63.0)	61.0	(1.003)	.960	59
1897	12.8	21.5	8.36			64.9		.960	62
1898	14.6	22.5	9.11	[33.2]	[69.5]	70.7	.967	.960	68
1899	16.0	22.6	9.54			74.0		.960	71
1900	16.3	23.1	9.73			75.5		.960	72
1901	18.4	23.2	10.37	(36.3)	(76.0)	80.5	(.939)	.965	78
1902	20.6	23.6	11.11			86.2		.965	83
1903	21.1	24.4	11.42	[41.3]	[86.4]	88.6	.965	.970	86
1904	19.8	25.3	11.23			87.1		.980	85
1905	23.7	25.5	12.43			96.5		.980	95
1906	25.4	27.0	13.25	(46.3)	(96.9)	102.8	(.987)	.985	101
1907	25.8	27.0	13.37			103.8		.990	103
1908	21.3	26.7	11.98	[49.6]	[103.8]	93.0	1.001	1.000	101
1909	25.3	26.8	13.18			102.3		[b] 1.018	104.1
1910	26.9	27.5	13.79			107.0		[b] .998	106.8
1911	25.8	28.7	13.73	[a] 52.9	110.7	106.5	1.000	[b] 1.028	109.5
1912	29.6	29.5	15.01			116.5		[b] .997	116.1
1913	31.7	29.7	15.68	[56.2]	[117.6]	121.7	.863	[b] .961	117.0
1914	29.8	30.5	15.29			118.7			112.1
1915	35	30.1	16.7			130			111.4
1916	41	30.2	18.6			144			120.0
1917	41	30.4	18.6			144			120.5
1918	41	31.7	18.9	[64.4]	[135]	147	.887		132.9
1919	38	30.1	17.6			137			132.6
1920	39	31.5	18.2			141			125.6
1921	30	28.1	14.8			115			114.9
1922	39	30.7	18.1			140			133.2
1923	45	33.7	20.4	[77.8]	[163]	158	.966		149.2
1924	43	33.6	19.8			154			149.0
1925	48	33.8	21.3			165			161.8
1926	50	35.7	22.3			173			170.8
1927	50	34.7	22.1			171			170.5
1928	52	35.8	23.0	[82.8]	[173]	178	.979		171.8
1929	58	36.4	24.9			193			181.8
1930	48	34.9	21.6			168			164.5
1931	39	34.6	18.9			147			153.0
1932	30	31.1	15.5			120			130.1
1933	36	31.6	17.4	[81.7]	[171]	135	.969		126.6
1934	39	29.3	17.8			138			138.5
1935	46	30.9	20.1			156			152.9
1936	55	33.0	23.3			181			173.3
1937	60	37.8	25.7			199			183.5
1938	46	34.9	21.0	[99.2]	[208]	163			175.1
1939	57	36.9	24.7			192			189.3
1940									205.8
1941									238.1
1942									266.9
1943									296.7
1944									317.9
1945									314.0
1946									282.5
1947									282.3
1948									293.1
1949									292.7
1950									318.1
1951									341.8
1952									353.5
1953									369.0
1954									363.1
1955									392.7
1956									400.9
1957									408.3

(Sources and Notes on next page)

N-3. GROSS NATIONAL PRODUCT (Continued)

N-3, SOURCES

COL. A, Manufacturing output index. Table N-4, Col. H.

COL. B, Extractive output, 1954 prices. Table EO-1, Col. G.

COL. C, Commodity output index, 1880 relative weights. Col. A. times .294 plus Col. B times .214. (These factors give the two series values in 1880 proportional to value added in 1879-80. See *1954 Census of Manufactures,* Vol. II, Part 1, p. 3, Value added in 1879, $1.97 billion; and our Table EO-2, Value added by agriculture and mining in 1880—omitting fishing and forest products, $3.10 billion.)

COL. D, Gross national product in 1929 prices. Simon Kuznets, in *Income and Wealth of the United States,* Series II (Bowes and Bowes, Cambridge, England 1952), p. 30. The figures in brackets are decade averages, for overlapping decades, 1869-78, 1874-83, 1879-88, etc. The figures in parentheses are five-year averages, 1869-73, 1874-78, 1879-83, etc. They are computed by subtraction from the decade averages, with the use of the one five-year average given for 1909-13 in *ibid.,* p. 32.

COL. E, Commerce series extrapolated by Kuznets series. Col. D linked to Col. I by 1909-13 average ratio.

COL. F, Commerce series extrapolated by commodity output series. Col. C linked to Col. I by 1909-13 average ratio.

COL. G, Ratio, Col. E/Col. F.

COL. H, Adjusted ratios. Col. G interpolated and adjusted, as explained in notes, below.

COL. I, Preferred series, gross national product in 1954 prices
1869-1908. Col. F multiplied by the ratios in Col. H.
1909-55. U.S. Department of Commerce, *U.S. Income and Output,* pp. 118, 138.
1956-57. U.S. Department of Commerce, *Survey Cur. Bus.,* July 1959, p. 7.

N-3, NOTES

( ) Extrapolation based on Kuznets' 1909-13 average (see source note to Col. D).

[a] Kuznets, *op. cit.,* p. 32.

[b] Ratio, Col. I/Col. F.

COL. G. The ratios in parentheses, representing the five-year averages of Kuznets' estimates to the commodity output series, are alternately low and high, as we read down the column. This may indicate that the 1909-13 average in Col. D is too low by comparison with the 1904-13 decade average, so that the 1904-08 average estimated by subtraction is too high:

$$5\ (x) = 10\ (49.6) - 5\ (52.9).$$
$$x = 46.3$$

If the five-year average of 52.9 were a little larger x would be smaller than 46.3; if the five-year average 46.3 were smaller, the next earlier average would be larger than 36.3; etc.

Because of this apparent discrepancy, we have based our ratios in Col. H on the published decade averages (figures in Col. G in brackets), rather than on our derived five-year averages.

Our series for 1869-1908, prior to the earliest available Department of Commerce estimates, is based on Kuznets' estimates, interpolated (to get annual estimates from his decade averages) by adjusted ratios of his estimates to our commodity output series (see Col. H). The decade averages of these adjusted ratios, for comparison with Col. G, are:

1869-78, .855	1889-98, .948
1874-83, .897	1894-1903, .960
1879-88, .922	1899-1908, .975
1884-93, .935	1904-13, .993

Needless to say, these estimates are quite rough, but they do have the advantage of utilizing the considerable study which Kuznets distills in his series, while getting an approximate annual series by an interpolator based on coverage of the great majority of commodity output (Col. C), covering some 60% of GNP in 1890.[1]

We have departed rather sharply from the Kuznets figures for the decade 1870-79 (note the divergence between the ratios in Cols. G and H for the decades 1869-78 and 1874-83). We believe this increases the accuracy of the estimates for the following reasons:

(1) The increase from 1870 to 1880 implied by Kuznets' averages is about 120%—greater than for any other pair of years a decade apart, except 1934-44 (from near the bottom of the Great Depression to the peak of the World War II boom). The rise from 1938 to 1948 (from recession to peak of postwar boom) was 67%. The figure we have chosen for 1870 in Col. I gives an 1870-80 growth of about 70%.

(2) The 1870-80 growth in output of industries for which we have estimates follows:

Agriculture (Table AO-1, 1902 prices)	47%
Mining (Table MO-1, 1902 prices)	105%
Manufacturing (Table N-4)	68%

Since Carson's estimates (derived from occupation census data) show 50% of the labor force in agriculture in this period, and another 18% in manufacturing and hand trades, it seems improbable that real GNP could increase much more steeply than an average for these two industries (though this would not be true if there had been sufficiently large inter-industry shifts).

Robert E. Gallman arrived at an increase in commodity output (including construction) of 62% in the decade 1869-79.[2]

Trade (retail and wholesale) occupied an estimated 6.1 to 6.6% of the labor force, and its output in this decade is estimated by Barger [3] to have increased 100%.

In addition, 11% of the labor force is estimated to have been in domestic and personal services and in government. Since these sectors of the economy show only arbitrary increases in productivity, usually estimated at about 1% per annum, the increase in output of these sectors can be estimated at about 1.10 times the increase in labor force (28%), or 41% ($1.10 \times 1.28 = 1.41$).

The remaining 13-14% of the labor force was engaged in: construction, 5-6%; transportation and public utilities, 5%; professional service and amusements, 2%; miscellaneous, 2%. None of these except transportation are likely candidates for a large increase in productivity between 1870 and 1880. Since the labor force increased 25% (Carson), the increase in output could hardly have exceeded 67% (even this would imply a productivity increase of 34% per man, as compared to 18% estimated for manufacturing, 11% for agriculture, and 20% for mining).[4]

If we weight these various increases by the rough percentages of the labor force we have noted, we get 63% as an estimate of the increase in output:

[1] Calculated as follows: GNP in current prices estimated at approximately $12 billion (Kuznets, *loc. cit.*), value added in 1889 by manufacturing and hand and neighborhood industries (*1954 Census of Manufactures,* Vol. II, Pt. 1, p. 3), $4.1 billion; value added in 1889-90 by agriculture and mining (Table EO-2), $3.3 billion. $\frac{4.1 + 3.3}{12} = 62\%$.

[2] "Commodity Output, 1839-1899," in *Trends in the American Economy in the Nineteenth Century* (National Bureau of Economic Research, New York, 1960), p. 43.

[3] Harold Barger, *Distribution's Place in the American Economy since 1869* (National Bureau of Economic Research, 1955), p. 22.

[4] See Tables AL-2, ML-2, and N-8.

Industry	(A) % increase in output	(B) % of labor force	(C) (A) × (B)
Agriculture	57	50	29
Mining	114	2	2
Manufacturing	68	18	12
Services & govt.	41	11	5
Trade	100	6	6
Construc., etc.	67	13	9
	—	100	63

This estimate may be somewhat low, because agricultural and services labor have generally produced less than their share of total output as measured in GNP estimates; these would be more lightly weighted in a computation of output which used *output* instead of labor as the weight. Since these two show the smallest increases in output, lightening their weight would cause the average increase of output to go up — perhaps to 66%, instead of the above 63%. However, the probable error of either estimate is no doubt 5 percentage points or larger.

(3) The growth in productivity (or decline in the employment-to-output ratio, Table N-6) for 1870-90 is fairly well in line with trends for the 1909-57 period (a growth of about 1½% per year), if we use the figure we have chosen. With the unadjusted Kuznets series, the increase in productivity for the decade 1870-79 would be steeper than for any decade in our record. The increase for 1870-90 would, however, be a little less steep than for 1934-54.

(4) Kuznets estimates that the *1870 Census* may have failed to cover about 5% of the national output; and his estimates are based on that Census. In addition, he guesses that perhaps as much as 20% of the total volume of commodities of the first decade of our period was omitted because of the concepts used and the series, like that for firewood, which he omitted for lack of data.[5]

It is apparent that this last bit of evidence (paragraph 4), as well as others, calls for some adjustments to the 1880 and later estimates, which we have not made.

[5] Simon Kuznets, *Capital in the American Economy: Its Formation and Financing* (National Bureau of Economic Research, 1961), pp. 516-17.

N-4. MANUFACTURING: Output

	Frickey (1899 = 100)	Persons (1909-13 = 100)	Col. A / Col. B	Fabricant (1899 = 100)	FRB (1947-49 = 100)	Col. E / Col. D	Col. D / Col. A	Preferred series (1947-49 = 100)
	A	B	C	D	E	F	G	H
1869	25	14.0	1.8					4.0
1870	25	13.7	1.8					4.0
1871	26	14.9	1.7					4.2
1872	31	18.3	1.7					5.0
1873	30	17.9	1.7					4.8
1874	29	17.5	1.7					4.6
1875	28	16.9	1.7					4.5
1876	28	16.9	1.7					4.5
1877	30	19.1	1.6					4.8
1878	32	20.0	1.6					5.1
1879	36	21.7	1.7					5.8
1880	42	27.0	1.56					6.7
1881	46	27.4	1.68					7.4
1882	49	30.9	1.59					7.8
1883	50	30.6	1.63					8.0
1884	47	30.8	1.53					7.5
1885	47	29.7	1.58					7.5
1886	57	35.2	1.62					9.1
1887	60	36.6	1.64					9.6
1888	62	37.3	1.66					9.9
1889	66	41.5	1.59					10.6
1890	71	44.3	1.60					11.4
1891	73	48.4	1.51					11.7
1892	79	48.6	1.63					12.6
1893	70	43.0	1.63					11.2
1894	68	42.2	1.61					10.9
1895	81	51.4	1.58					13.0
1896	74	47.2	1.57					11.8
1897	80	53.0	1.51					12.8
1898	91	57.3	1.59					14.6
1899	100	60.4	1.66	100			1.000	16.0
1900	100	61.0	1.64	102			1.020	16.3
1901	111	67.6	1.64	115			1.036	18.4
1902	127	73.7	1.72	129			1.016	20.6
1903	126	74.9	1.68	132			1.048	21.1
1904	121	73.7	1.64	124			1.025	19.8
1905	140	86.4	1.62	148			1.057	23.7
1906	152	91.8	1.66	159			1.046	25.4
1907	156	91.2	1.71	161			1.032	25.8
1908	127	76.1	1.67	133			1.047	21.3
1909	166	93.6	1.77	158			.952	25.3
1910	172	96.0	1.79	168			.977	26.9
1911	162	92.4	1.75	161			.994	25.8
1912	194	106.9	1.81	185			.954	29.6
1913	203	111.1	1.83	198			.975	31.7
1914	192	102.1	1.88	186			.969	29.8
1915		114.1		218				35
1916		136.0		259				41
1917		137.1		257				41
1918		134.8		254				41
1919		131.7		222	38	.171		38
1920		139.7		242	39	.161		39
1921		108.1		194	30	.155		30
1922		143.1		249	39	.157		39
1923		169.8		280	45	.161		45
1924		156.4		266	43	.162		43
1925		175.1		298	48	.161		48
1926		178.7		316	50	.158		50
1927		173.9		317	50	.158		50
1928		181.5		332	52	.157		52
1929		192.9		364	58	.159		58
1930		153.3		311	48	.154		48
1931				262	39	.149		39
1932				197	30	.152		30
1933				228	36	.158		36
1934				252	39	.155		39
1935				301	46	.153		46
1936				353	55	.156		55
1937				376	60	.160		60
1938					46			46
1939					57			57
1940					66			66
1941					88			88
1942					110			110
1943					133			133
1944					130			130
1945					110			110
1946					90			90
1947					100			100
1948					103			103
1949					97			97
1950					113			113
1951					121			121
1952					125			125
1953					136			136
1954					127			127
1955					140			140
1956					144			144
1957					145			145

N-4, SOURCES

COL. A, Edwin Frickey, *Production in the United States 1860-1914* (Harvard University Press, 1947), p. 54, Table 6.

COL. B, Warren M. Persons, *Forecasting Business Cycles* (John Wiley & Sons, Inc., New York, 1931), p. 170, Table 12, "Production of Manufactures" (*Hist. Stat. 1949*, Series J-14).

COL. C, Ratio, Col. A/Col. B.

COL. D, Solomon Fabricant, *The Output of Manufacturing Industries, 1899-1937* (National Bureau of Economic Research, New York, 1940), p. 44, Table 1 (*Hist. Stat. 1949*).

COL. E

1919-50. Board of Governors, Federal Reserve System, *Federal Reserve Monthly Index of Industrial Production*, 1953 Revision, reprinted from *Federal Reserve Bulletin*, Dec. 1953, p. 87; "Manufactures, Total."

1951-57. *Stat. Abstract 1958*, p. 775, "Index, Total Manufactures."

COL. F, Ratio, Col. E/Col. D.

COL. G, Ratio, Col. D/Col. A.

COL. H, Preferred series

1870-98. Col. A times 1919-29 average of the ratios in Col. F (.160) (average ratio in Col. G is approximately 1.00; thus Col. F ratio may be applied to Col. A).

1899-1918. Col. D times 1919-29 average of the ratios in Col. F (.160).

1919-57. Col. E, transcribed.

N-4, NOTES

Col. A *Coverage and Weights.* The index of manufacturing output computed by Frickey covers 11 basic manufacturing groups represented by 40 individual series. The groups, and their relative importance in 1899, the weight base period, are as follows:

1. Food and kindred products	10.73%
2. Textiles and their fabrics	18.91
3. Iron and steel and their products	21.09
4. Lumber and its remanufactures	13.57
5. Paper and printing	10.13
6. Liquors and beverages	4.12
7. Chemicals and allied products	7.99
8. Metals and metal products, other than iron and steel	5.63
9. Tobacco manufactures	3.08
10. Vehicles for land transport	3.20
11. Miscellaneous industries	1.55
Total	100.00

The 10 most important individual commodity series make up 70% of the total, while the balance is contributed by 30 commodity series. The 10 most important series, and their relative importance in the weight base period, are:

1. Iron and steel end products, other than rails and structural iron and steel	18.38%
2. Paper consumed	8.67
3. Lumber produced	8.05
4. Wheat flour produced	7.55
5. Lumber consumed	5.52
6. Raw cotton consumed, adjusted for foreign trade in cotton goods	5.41
7. Raw cotton consumed	4.99
8. Fermented liquor produced	3.85
9. Raw wool consumed, adjusted for foreign trade in wool goods	3.62
10. Copper consumed	3.45

As is evident above, many of the manufacturing industries are represented by series referring to raw materials consumed by the industry. For example, the output of textile fabrics is partially represented by the consumption of raw cotton, and the output of articles from textile materials is represented by consumption of raw cotton and raw wool adjusted for foreign trade in finished goods. Also, the production of lumber represents the output of lumber, timber products, and pulpwood, and the consumption of lumber represents the output of "other products" under the group "lumber and its remanufactures."

The weights by which the individual commodity series were combined represent "value added." They were derived from Census data for the groups listed above by apportioning the group values on a percentage basis among subgroups and then among individual commodities. Thus, the value added within the lumber industry accounts for 13.5% of the total for all manufacturing and is represented by two series, lumber production and lumber consumption, with relative weights of 8% and 5½%, respectively.

Col. B. This index is a composite of indexes computed at different periods, using various techniques and coverages. For this reason, the following description is broken down by periods. The different series were spliced on the basis of the ratios of overlapping data.

1863-1874. The index is "A. S. McLeod's aggregative average of 6 manufactures, 1863-1866, and 12 manufactures, 1867-1874, combined by using the fixed 'values added' per unit in 1869." (Persons, *op. cit.*, p. 173.)

1875-1898. The index is "A. S. McLeod's aggregative average of 21 manufactures, combined by using the fixed values added in 1889." (*Ibid.*)

1899-1930. The index covering this period was made up of the following eleven industrial groups with relative importance in the weight base period, 1919, as given:

1. Food and kindred products	11.2%
2. Textiles and their products	18.6
3. Iron and steel with their products	22.4
4. Lumber and its remanufactures	8.3
5. Leather and its finished products	4.4
6. Paper and printing	8.3
7. Chemicals and allied products	7.3
8. Stone, clay, and glass products	3.4
9. Nonferrous metals and their products	3.9
10. Tobacco manufactures	2.4
11. Automotive products	9.8

Data covering 30 commodities were used to represent the above industries. The 10 most important of these commodities, accounting for 69% of the total, and their relative importance are given below:

1. Pig iron produced	11%
2. Steel ingots produced	11
3. Raw cotton consumed	9
4. Lumber, total cut	7
5. Raw wool consumed	6
6. Automobiles produced	6
7. Newsprint consumed	6
8. Wheat flour produced	5
9. Byproduct coke produced	4
10. Sulfuric acid produced	4

The weights were based on value added in manufacture and were derived from the *1919 Census of Manufactures.* As in Frickey, adjustment for undercoverage was made by computing an index for census years on a large number of industries and then interpolating on the basis of the intercensal movement of the index computed from the 30 annual series.

Col. C. The two indexes of manufacturing output available for the period prior to 1899 show slight differences in movement. For the first half of the period of overlap, 1870-1914, Frickey shows a slightly lesser rate of increase than Persons,

(continued on next page)

and for the latter half, a higher rate of increase. Coverage of the two indexes for the period following 1899 is similar, as is the weighting by industrial group. The major differences are the higher weight given to automotive products and the exclusion of liquor and beverages by Persons. The reason for the differences in movement is not readily apparent. For the period prior to 1899, the Frickey index has considerably better coverage, so we have chosen it as our extrapolator for 1899-1870.

Col. D. The National Bureau's Index of Manufacturing Output is based on census material. Its coverage, however, is considerably larger than that of either of the indexes discussed above. The number of series included were:

53 series for 1899-1909
65 series for 1909-1919
74 series for 1919-1929
132 series for 1929-1937

These series were combined by use of the Edgeworth formula, i.e.,

$$I = \frac{\Sigma\, q_1\ (p_0 + p_1)}{\Sigma\, q_0\ (p_0 + p_1)}$$

Three weight base periods were used. For 1899 and 1904, 1909 was the base (o). For 1909 and 1914 it was 1919; and for 1919 and all other census years (biennially through 1937), 1929. The three series were spliced to make up the index of output for census years. An annual index was obtained by interpolating between census years on the basis of less comprehensive annual data.

An index of output was prepared for each industry, using unit values of the products of that industry as weights. The industry indexes were then weighted by value added to obtain group and total indexes.

N-5. TOTAL U.S. WORKERS

(millions)

	Total manpower	Civilian government	Military	Agriculture	Nonfarm employees	Proprietors, nonfarm	Preferred series, total U.S. workers
	A	B	C	D	E	F	G
1870	12.9						12.6
1880	17.4						17.0
1890	23.7						23.1
1900	29.1	1.0	.123	10.5	14.8	(2.0)	28.4
1901		1.1	.116	(10.6)	15.9	(2.0)	29.7
1902		1.1	.103	(10.6)	17.0	(2.1)	30.9
1903		1.2	.103	(10.7)	17.5	(2.1)	31.6
1904		1.2	.107	(10.7)	17.3	(2.2)	31.5
1905		1.2	.105	(10.8)	18.5	(2.2)	32.8
1906		1.3	.109	(10.9)	19.7	(2.2)	34.2
1907		1.3	.106	(10.9)	20.2	(2.3)	34.8
1908		1.4	.125	(11.0)	19.0	(2.3)	33.9
1909		1.5	.138	(11.0)	20.9	(2.4)	35.9
1910	36.9	1.5	.135	11.1	21.4	2.4	36.5
1911		1.6	.141	11.1	21.8	(2.4)	37.0
1912		1.6	.149	11.1	22.9	(2.5)	38.2
1913		1.7	.151	11.1	23.9	(2.5)	39.4
1914		1.8	.161	11.1	23.0	(2.6)	38.7
1915		1.8	.169	11.1	22.9	(2.6)	38.6
1916		1.9	.174	11.2	25.3	(2.6)	41.2
1917		2.0	.835	11.1	25.7	(2.7)	42.3
1918		2.4	2.968	11.0	26.4	(2.7)	45.5
1919		2.4	1.266	10.8	27.1	(2.8)	44.4
1920		2.3	.353	11.0	27.1	2.8	43.6
1921		2.3	.355	11.0	24.6	(2.9)	41.2
1922		2.3	.266	10.9	26.4	(3.0)	42.9
1923		2.4	.245	10.8	28.9	(3.1)	45.4
1924		2.5	.261	10.7	28.1	(3.2)	44.8
1925		2.6	.255	10.7	28.9	(3.2)	45.7
1926		2.7	.251	10.6	30.1	(3.3)	47.0
1927		2.8	.254	10.4	30.1	(3.4)	47.0
1928		2.8	.256	10.4	30.3	(3.5)	47.3
1929		2.9	.261	10.4	31.3	(3.6)	47.7
1930						3.65	45.7
1931							42.6
1932							39.1
1933							39.4
1934							42.5
1935							44.1
1936							47.1
1937							48.4
1938							46.7
1939							48.2
1940							50.2
1941							54.5
1942							59.7
1943							65.4
1944							66.6
1945							64.7
1946							58.9
1947							59.1
1948							59.8
1949							58.7
1950							60.0
1951							64.0
1952							65.2
1953							66.0
1954							64.3
1955							66.1
1956							67.6
1957							67.7

N-5, SOURCES

COL. A, Total manpower. Daniel Carson, "Industrial Composition of Manpower," in *Studies in Income and Wealth*, Vol. XI, p. 47.

COL. B, Civilian government, persons engaged. John W. Kendrick, *Productivity Trends in the United States* (New York, National Bureau of Economic Research, 1961), pp. 305-6, plus "Government enterprises" employment, p. 308, interpolated for intercensal years; linked to U.S. Department of Commerce National Income series at 1929 (ratio, 1.163).

COL. C, Military employment. Kendrick, *loc. cit.*

COL. D, Agricultural employment. Table AL-1, Col. H; straight line interpolation for 1901-09.

COL. E, Nonfarm employees. Series from Stanley Lebergott.[1]

COL. F, Proprietors, nonfarm

1900. An extrapolation of the 1910-40 trend as shown in *Hist. Stat. 1949*, series D-81 and D-82.

1910, 1920, 1930. *Hist. Stat. 1949*, series D-81 plus D-82. The non-decadal years are interpolated.

COL. G, Preferred series, total U.S. workers

1870-90. Col. A linked to Col. G at 1900 (ratio .9759).

1900-29. Sum of Cols. B through F.

1930-45. U.S. Department of Commerce, *National Income 1954*, Table 28, line 1, all industries, number of persons engaged in production, minus line 3, farms, plus agriculture series in Table AL-1, Col. H.

1946-55. *U.S. Income and Output*, Table VI-16, same adjustment as above.

1956-57. *Survey Cur. Bus.*, July 1959, p. 37, same adjustment as above.

N-5, NOTES

( ) Interpolation or extrapolation.

[1] Preliminary figures for Lebergott's forthcoming *Manpower and Economic Growth: The American Record Since 1800* (McGraw-Hill). He informs us revisions in the final version will be from —0.3 to +0.6, which would change our Col. G. less than 0.7% in any year.

While the concept of employment is not yet wholly clear (cf. our adjustment of the Commerce series for agriculture), and while it gets more vague as we go back to 1870 and rely on the Census of Occupations, we believe that this series offers a reasonably close approximation to labor inputs, on a consistent basis over time.

N-6. EMPLOYMENT PER UNIT OF GNP

	Total workers (millions)	GNP ($ bil., 1954 prices)	Employment per unit of GNP (men per $ mil, 1954 prices)
	A	B	C
1870	12.6	21	600
1880	17.0	36	470
1890	23.1	53	440
1900	28.4	72	390
1901	29.7	78	380
1902	30.9	83	370
1903	31.6	86	370
1904	31.5	85	370
1905	32.8	95	350
1906	34.2	101	340
1907	34.8	103	340
1908	33.9	101	340
1909	35.9	104.1	345
1910	36.5	106.8	342
1911	37.0	109.5	338
1912	38.2	116.1	329
1913	39.4	117.0	337
1914	38.7	112.1	345
1915	38.6	111.4	346
1916	41.2	120.0	343
1917	42.3	120.5	351
1918	45.5	132.9	342
1919	44.4	132.6	335
1920	43.6	125.6	347
1921	41.2	114.9	359
1922	42.9	133.2	322
1923	45.4	149.2	304
1924	44.8	149.0	301
1925	45.7	161.8	282
1926	47.0	170.8	275
1927	47.0	170.5	276
1928	47.3	171.8	275
1929	47.7	181.8	262
1930	45.7	164.5	278
1931	42.6	153.0	278
1932	39.1	130.1	301
1933	39.4	126.6	311
1934	42.5	138.5	307
1935	44.1	152.9	288
1936	47.1	173.3	272
1937	48.4	183.5	264
1938	46.7	175.1	267
1939	48.2	189.3	255
1940	50.2	205.8	244
1941	54.5	238.1	229
1942	59.7	266.9	224
1943	65.4	296.7	220
1944	66.6	317.9	209
1945	64.7	314.0	206
1946	58.9	282.5	208
1947	59.1	282.3	209
1948	59.8	293.1	204
1949	58.7	292.7	201
1950	60.0	318.1	189
1951	64.0	341.8	187
1952	65.2	353.5	184
1953	66.0	369.0	179
1954	64.3	363.1	177
1955	66.1	392.7	168
1956	67.6	400.9	169
1957	67.7	408.3	166

N-6, SOURCES

COL. A, Total U.S. workers. Table N-5, Col. G. transcribed.
COL. B, Gross national product. Table N-3, Col. I, transcribed.
COL. C, Employment per unit of GNP. Ratio, Col. A/Col. B.

N-7. MANUFACTURING: Employment

(millions)

	Carson, manpower available	Commerce, persons engaged	Carson linked to Commerce	Lebergott, employees	Preferred series, manufacturing employment
	A	B	C	D	E
1869				2.1	2.1
1870	2.25		2.16		2.1
1879				2.9	2.9
1880	3.17		3.05		3.0
1889				4.0	4.0
1890	4.75		4.56	4.2	4.2
1891				4.3	4.3
1892				4.5	4.5
1893				4.2	4.2
1894				4.0	4.0
1895				4.4	4.4
1896				4.4	4.4
1897				4.6	4.6
1898				4.8	4.8
1899				5.2	5.2
1900	6.34		6.09	5.4	5.4
1901				5.7	5.7
1902				6.2	6.2
1903				6.4	6.4
1904				6.1	6.1
1905				6.6	6.6
1906				7.1	7.1
1907				7.2	7.2
1908				6.5	6.5
1909				7.5	7.5
1910	8.23		7.91	7.7	7.7
1911				7.7	7.7
1912				8.2	8.2
1913				8.6	8.6
1914				8.1	8.1
1915				8.1	8.1
1916				9.5	9.5
1917				9.7	9.7
1918				10.0	10.0
1919				10.5	10.5
1920	10.88		10.45	10.5	10.5
1921				8.1	8.1
1922				9.0	9.0
1923				10.2	10.2
1924				9.5	9.5
1925				9.8	9.8
1926				10.0	10.0
1927				9.8	9.8
1928				9.8	9.8
1929		10.56		10.5	10.6
1930	10.99	9.42	10.56	9.4	9.4
1931		7.98		8.0	8.0
1932		6.75		6.8	6.8
1933		7.27		7.3	7.3
1934		8.44		8.3	8.4
1935		8.98		8.9	9.0
1936		9.73		9.7	9.7
1937		10.69		10.6	10.7
1938		9.23		9.3	9.2
1939		10.09		10.1	10.1
1940		11.0		10.8	11.0
1941		13.3		13.0	13.3
1942		15.4		15.1	15.4
1943		17.6		17.4	17.6
1944		17.2		17.1	17.2
1945		15.4		15.3	15.4
1946		14.7		14.5	14.7
1947		15.4		15.3	15.4
1948		15.5		15.3	15.5
1949		14.4		14.2	14.4
1950		15.2		15.0	15.2
1951		16.4		16.1	16.4
1952		16.7		16.3	16.7
1953		17.5		17.2	17.5
1954		16.2		16.0	16.2
1955		16.8		16.6	16.8
1956		17.1		16.9	17.1
1957		17.0		16.8	17.0

N-7, SOURCES

COL. A, Daniel Carson, "Industrial Composition of Manpower," in *Studies in Income and Wealth*, Vol. XI, p. 47 (estimates based on Census data on occupations).

COL. B, U.S. Department of Commerce, *National Income 1954*, Table 28, and *U.S. Income and Output*, Table VI-16; number of persons engaged in production.

COL. C, Col. A for 1930 linked to Col. B for 1929. The manpower available in 1930 was nearly the same as in 1929, though the employment (Col. B) was less. To extrapolate employment by manpower available, the linkage is made at a point where nearly all available manpower was employed.

COL. D, Stanley Lebergott, memorandum of May 23, 1958, "Manufacturing: Wage and Salary Workers, 1869-1957."

COL. E, Preferred series

1869-1928. Col. D (for 1870 and 1880, Col. C), transcribed.

1929-57. Col. B, transcribed.

N-7, NOTES

The Carson series was developed with the aid of Alba Edwards' study, published by the Census Bureau in 1940, which contains numerous estimates and allocations of data from the various censuses on occupations which were not clearly allocable to manufacturing, or were of kinds common to several industries.

The Lebergott series is preliminary. It is based on BLS data for 1919-57, linked to *Census of Manufactures* data to 1899, with interpolations for intercensal years: 1909-19 based on a correlation with William H. Shaw's *Value of* [manufactured] *Commodity Output since 1869* (National Bureau of Economic Research, New York, 1947); 1899-1909 based on estimates by Edwin Frickey for Massachusetts, New Jersey, Ohio, Pennsylvania, and New York; 1889-99 extrapolation based on Frickey; 1869 and 1879 based on Richard A. Easterlin's wage earner series, in Everett Lee *et al.*, *Population Redistribution and Economic Growth 1870-1950* (American Philosophical Society, Philadelphia, 1957), p. 636.

Lebergott's series is for employees; the Commerce series includes entrepreneurs as well. The lack of comparability between the two series makes so little difference at the point of juncture (1929) that a linkage ratio was not used for our preferred series.

N-8. MANUFACTURING: Employment/Output

	Manufacturing output	Manufacturing employment (mil.)	Preferred series, employment/output (Col. B/Col. A)
	A	B	C
1869	4.0	2.1	.53
1870	4.0	2.1	.53
1871	4.2		
1872	5.0		
1873	4.8		
1874	4.6		
1875	4.5		
1876	4.5		
1877	4.8		
1878	5.1		
1879	5.8	2.9	.50
1880	6.7	3.0	.45
1881	7.4		
1882	7.8		
1883	8.0		
1884	7.5		
1885	7.5		
1886	9.1		
1887	9.6		
1888	9.9		
1889	10.6	4.0	.38
1890	11.4	4.2	.37
1891	11.7	4.3	.37
1892	12.6	4.5	.36
1893	11.2	4.2	.38
1894	10.9	4.0	.37
1895	13.0	4.4	.34
1896	11.8	4.4	.37
1897	12.8	4.6	.36
1898	14.6	4.8	.33
1899	16.0	5.2	.33
1900	16.3	5.4	.33
1901	18.4	5.7	.31
1902	20.6	6.2	.30
1903	21.1	6.4	.30
1904	19.8	6.1	.31
1905	23.7	6.6	.28
1906	25.4	7.1	.28
1907	25.8	7.2	.28
1908	21.3	6.5	.31
1909	25.3	7.5	.30
1910	26.9	7.7	.29
1911	25.8	7.7	.30
1912	29.6	8.2	.28
1913	31.7	8.6	.27
1914	29.8	8.1	.27
1915	35	8.1	.23
1916	41	9.5	.23
1917	41	9.7	.24
1918	41	10.0	.24
1919	38	10.5	.28
1920	39	10.5	.27
1921	30	8.1	.27
1922	39	9.0	.23
1923	45	10.2	.23
1924	43	9.5	.22
1925	48	9.8	.204
1926	50	10.0	.200
1927	50	9.8	.196
1928	52	9.8	.188
1929	58	10.6	.183
1930	48	9.4	.196
1931	39	8.0	.205
1932	30	6.8	.227
1933	36	7.3	.203
1934	39	8.4	.215
1935	46	9.0	.196
1936	55	9.7	.176
1937	60	10.7	.178
1938	46	9.2	.200
1939	57	10.1	.177
1940	66	11.0	.167
1941	88	13.3	.151
1942	110	15.4	.140
1943	133	17.6	.132
1944	130	17.2	.132
1945	110	15.4	.140
1946	90	14.7	.163
1947	100	15.4	.154
1948	103	15.5	.150
1949	97	14.4	.148
1950	113	15.2	.135
1951	121	16.4	.136
1952	125	16.7	.134
1953	136	17.5	.129
1954	127	16.2	.128
1955	140	16.8	.120
1956	144	17.1	.119
1957	145	17.0	.117

N-8, SOURCES

COL. A, Output. Table N-4, Col. H, transcribed.
COL. B, Employment. Table N-7, Col. E, transcribed.
COL. C, Preferred series, employment/output. Ratio, Col. B/Col. A.

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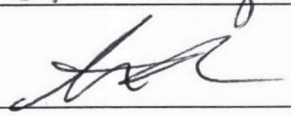
Signature: 

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